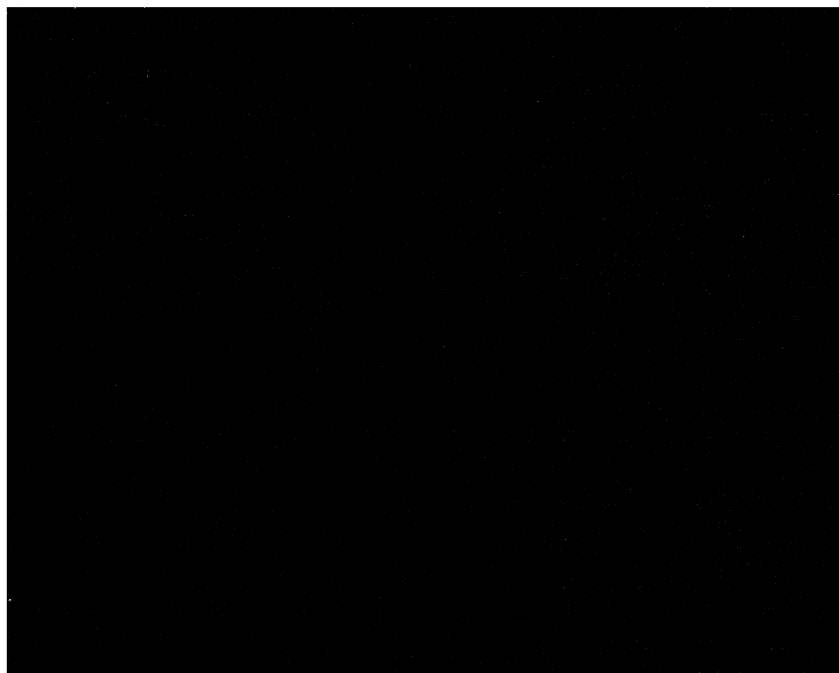


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# NATIONAL ASSOCIATION OF COST ACCOUNTANTS

YEAR BOOK  
1928

PROCEEDINGS OF THE  
NINTH INTERNATIONAL COST CONFERENCE

At the Hotel Commodore  
New York  
June 12, 13, 14, 15, 1928



NATIONAL ASSOCIATION BUILDING  
26 WEST 44TH STREET, NEW YORK CITY

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1928

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- Program—GEORGE OLIVE, *Chamber of Commerce Bldg.*, Indianapolis, Ind.
- Publications—DALE HODGES, *Diamond Chain & Mfg. Co.*, Indianapolis, Ind.
- Publicity—J. C. CRIM, *G. & J. Tire Co.*, Indianapolis, Ind.
- Research and Standardization—A. L. PRICKETT, *Indiana University*, Bloomington, Ind.
- Past President: C. F. EVELEIGH, *Eli Lilly & Co.*, Indianapolis, Ind.
- Meeting Day—Third Wednesday

## KANSAS CITY CHAPTER

- President: EARLE N. DANIELS, *Irving Pitt Mfg. Co.*, 802 Locust St., Kansas City, Mo.
- Vice-President: B. P. MICHAELSEN, *Dickey Clay Products Co.*, New York Life Bldg., Kansas City, Mo.
- Vice-President: BENJAMIN E. YOUNG, *Commerce Trust Co.*, 10th and Walnut Sts., Kansas City, Mo.
- Treasurer: J. D. M. CROCKETT, *Crockett, Couchman & Crawford*, 1015 Continental Bldg., Kansas City, Mo.

- Secretary: EDWARD J. DILLON, *Edward J. Dillon & Co.*, 1100 Continental Bldg., Kansas City, Mo.
- Directors: *Meetings*—DAVID B. PETER, *Price-Waterhouse & Co.*, 1114 Federal Reserve Bank Bldg., Kansas City, Mo.  
*Membership*—G. S. WAYMAN, *H. D. Lee Mercantile Co.*, 20th and Wyandotte, Kansas City, Mo.  
*Program*—C. H. SIGLER, *Burroughs Adding Machine Co.*, 1209 Grand Ave., Kansas City, Mo.  
*Publications*—JARVES G. FLYNN, *Loose-Wiles Biscuit Co.*, 811 Commerce Bldg., Kansas City, Mo.  
*Publicity*—R. R. MCUREIGHT, *Midland Flour Milling Co.*, 1100 Board of Trade Bldg., Kansas City, Mo.  
*Research and Standardization*—WALLACE M. AGIN, *Sheffield Steel Corp.*, Sheffield Station, Kansas City, Mo.
- Past President: NEIL G. LILLEY, *Kansas City Structural Steel Co.*, Kansas City, Kan.
- Meeting Day—Fourth Monday

## LOS ANGELES CHAPTER

- President: M. LELAND STANFORD, 922 C. C. Chapman Bldg., Los Angeles, Calif.
- Vice-President: J. EARL ATKINS, *California Dairies, Inc.*, 241 Winston St., Los Angeles, Calif.
- Treasurer: GEO. F. ANDERSON, *Tabulating Machine Co.*, 131 E. 6th St., Los Angeles, Calif.
- Secretary: RAY S. MARSHALL, 525 N. Curson Ave., Los Angeles, Calif.
- Directors: *Meetings*—FRED W. KRAGE, *Azelson Machine Co.*, P. O. Box 337, Los Angeles, Calif.  
*Membership*—WALTER C. WEIGHT, 1750 Tamarind St., Los Angeles, Calif.  
*Program*—HARRY L. MILLER, *Fibreboard Products, Inc.*, Los Angeles, Calif.  
*Publications*—ALBERT J. PAUS, *Fibreboard Products, Inc.*, Los Angeles, Calif.  
*Publicity*—RAY C. PERKINS, *The Adamson Organizations*, Los Angeles, Calif.  
*Research and Standardization*—N. J. REDMAN, *Blue Diamond Co.*, Los Angeles, Calif.  
H. M. CHRISTENSEN, *C. F. Braun & Co.*, Alhambra, Calif.
- Past Presidents: WM. B. EDSON, 721 S. Mentor Ave., Pasadena, Calif.  
JOSEPH A. GARRETT, *Garrett, Adlequist & Associates*, 617 Chamber of Commerce Bldg., Los Angeles, Calif.  
E. W. HEDLAND, *Los Angeles Examiner*, Los Angeles, Calif.  
HENRY M. THOMSON, *Thomson, Cooper & Thomson*, 1428 Chapman Bldg., Los Angeles, Calif.  
HARRY H. BASKERVILLE, *Baskerville Audit Co.*, 841 Petroleum Securities Bldg., Los Angeles, Calif.
- Meeting Day—Third Tuesday

## LOUISVILLE CHAPTER

- President: G. W. SHIELDS, *Federal Chemical Co.*, 1712 Heyburn Bldg., Louisville, Ky.
- Vice-President: GOLDSBOROUGH ROBINSON, *Humphrey, Robinson & Co.*, Columbia Bldg., Louisville, Ky.
- Vice-President: W. T. ZURSCHMIEDE, *National Bank of Kentucky*, 5th and Main Sts., Louisville, Ky.

## OFFICERS OF THE ASSOCIATION

- Treasurer: RICHARD C. F. HANSEN, *Froznpure Ice Cream Co.*, 26th St. and Broadway, Louisville, Ky.
- Secretary: R. E. JACKE, *United States Foil Co.*, 30th St. and Grand Ave., Louisville, Ky.
- Directors: *Meetings*—FRANK J. PREIFFER, *Louisville Gas & Electric Co.*, 311 West Chestnut St., Louisville, Ky.  
*Membership*—O. G. VAN HORN, 519 1/2 S. Third St., Louisville, Ky.  
*Program*—E. G. PAULSON, *American Creosoting Co.*, Columbia Bldg., Louisville, Ky.  
*Publications*—L. C. HUTSON, *Whiteside Bakery Co.*, 1406 W. Broadway, Louisville, Ky.  
*Publicity*—V. F. KIMBEL, *Ballard & Ballard*, Louisville, Ky.  
*Research and Standardization*—H. H. NEEL, *D. H. Ewing's Sons*, 3rd St., and Kentucky, Louisville, Ky.
- Meeting Day—Third Tuesday.

## . MILWAUKEE CHAPTER

- President: CARL H. LAUN, 1246 41st St., Milwaukee, Wis.
- Vice-President: WM. M. METZKER, *Milwaukee Typothetae*, 445 Milwaukee St., Milwaukee, Wis.
- Vice-President: L. G. REGNER, *Briggs & Stratton Co.*, 1047 13th St., Milwaukee, Wis.
- Treasurer: HAROLD A. TODD, *First Wisconsin National Bank*, 425 East Water St., Milwaukee, Wis.
- Secretary: JOHN G. CONLEY, 425 East Water St., Milwaukee, Wis.
- Directors: *Meetings*—V. A. FRIDL, *Gender, Palschke & Frey*, 15th St. and St. Paul Ave., Milwaukee, Wis.  
*Membership*—P. A. KNUDSON, *National Brake & Electric Co.*, Milwaukee, Wis.  
*Program*—CLYDE E. HUDSPETH, *Burroughs Adding Machine Co.*, 165 Michigan St., Milwaukee, Wis.  
*Publications*—WM. M. METZKER, *Milwaukee Typothetae*, 445 Milwaukee St., Milwaukee, Wis.  
*Publicity*—W. P. WESTFALL, *International Business Machines Corp.*, 212 Michigan Ave., Milwaukee, Wis.  
*Research and Standardization*—L. G. REGNER, *Briggs & Stratton*, 1047 13th St., Milwaukee, Wis.
- Past Presidents: B. H. SPRINGER, *John Schroeder Lumber Co.*, Milwaukee, Wis.  
 JERRY KEHOE, *Allis Chalmers Co.*, West Allis, Wis.  
 H. JACK BOCK, *Stevenson, Harrison & Jordan*, Chicago, Ill.  
 W. K. BOYLE, *National Brake & Electric Co.*, Milwaukee, Wis.
- Meeting Day—Second Thursday.

## NEW YORK CHAPTER

- President: CHARLES A. WILLIAMS, *American Safety Razor Corp.*, Jay and Johnson Sts., Brooklyn, N. Y.
- Vice-President: C. H. TOWNS, *Loomis, Suffern & Fernald*, 50 Broad St., New York, N. Y.
- Vice-President: ANDREW L. PRENTICE, *Worthington Pump & Machinery Corp.*, 2 Park Ave., New York, N. Y.
- Secretary-Treasurer: J. D. GRIFFIN, *N. A. C. A.*, 26 W. 44th St., New York, N. Y.

- Directors:** *Meetings*—C. H. TOWNS, *Loomis, Suffern & Fernald*, 50 Broad St., New York, N. Y.  
 L. H. LAMORTE, *Tabulating Machine Co.*, 310 5th Ave., New York, N. Y.  
 G. A. WARE, *News Print Service Bureau*, 342 Madison Ave., New York, N. Y.  
*Membership*—HAROLD C. FULLER, *Excelsior Hardware Co.*, Stamford, Conn.  
*Program*—A. L. PRENTICE, *Worthington Pump & Machinery Corp.*, 2 Park Ave., New York, N. Y.  
 J. T. MADDEN, *New York University, School of Commerce*, New York, N. Y.  
 E. D. PAGE, *U. S. Rubber Co.*, 1790 Broadway, New York, N. Y.  
 W. F. PULSTER, *Remington-Rand Business Service, Inc.*, 374 Broadway, New York, N. Y.  
*Publications*—T. M. MCNIECE, *Union Carbide & Carbon Corp.*, 30 E. 42nd St., New York, N. Y.  
*Publicity*—G. A. WARE, *News Print Service Bureau*, 342 Madison Ave., New York, N. Y.  
*Research and Standardization*—J. T. MADDEN, *New York University, School of Commerce*, New York, N. Y.
- Past Presidents:** CHARLES VAN ZANDT, *Educational Pictures, Inc.*, 1501 Broadway, New York, N. Y.  
 H. G. CROCKETT, *Scorell, Wellington & Co.*, 270 Madison Ave., New York, N. Y.  
 JOHN E. HORN, *Bakelite Corp.*, 247 Park Ave., New York, N. Y.  
 GEORGE REA, *Touche, Niren & Co.*, 80 Maiden Lane, New York, N. Y.  
 ERIC A. CAMMAN, *Peat, Marwick, Mitchell & Co.*, 40 Exchange Pl., New York, N. Y.
- Meeting Day—Second Tuesday (February, third Tuesday).

## PHILADELPHIA CHAPTER

- President:** EDWARD P. MOXEY, JR., *Edward P. Moxey & Co.*, 1416 Chestnut St., Philadelphia, Pa.
- Vice-President:** GEORGE P. LANDWEHR, *The Philadelphia Electric Co.*, 1000 Chestnut St., Philadelphia, Pa.
- Vice-President:** ROBERT BURNS, *American Insulating Machinery Co.*, Fairhill and Huntingdon Sts., Philadelphia, Pa.
- Treasurer:** WESTON J. HIBBS, *United Engineers-Contractors, Inc.*, 112 North Broad St., Philadelphia, Pa.
- Secretary:** CLYDE S. CRESSEY, *Pierce School of Business Administration*, 1420 Pine St., Philadelphia, Pa.
- Directors:** *Meetings*—ROBERT BURNS, *American Insulating Machinery Co.*, Fairhill and Huntingdon Sts., Philadelphia, Pa.  
*Membership*—JOHN HINN, JR., *The Ballinger Company*, 12th and Chestnut Sts., Philadelphia, Pa.  
*Program*—FRANK S. GLENDENING, *Widener Bldg.*, Philadelphia, Pa.  
*Publications*—HOWARD W. WYCKOFF, *Tioga Steel & Iron Co.*, Franklin Trust Bldg., Philadelphia, Pa.  
*Publicity*—VERL L. ELLIOTT, *Atlantic Refining Co.*, 260 S. Broad St., Philadelphia, Pa.  
*Research and Standardization*—JOHN BALCH, *Balch, Funk Company*, West End Trust Bldg., Philadelphia, Pa.  
 ARTHUR W. MARSHALL, *General Asphalt Company*, 1600 Arch St., Philadelphia, Pa.

Past Presidents: EDMUND L. OERTER, *J. G. Brill Company*, 62nd St., and Woodland Ave., Philadelphia, Pa.  
 JOHN M. SCANLON, *Hess-Bright Mfg. Co.*, Front St. and Erie Ave., Philadelphia, Pa.  
 WALTER CAMENISCH, *Keystone Watchcase Corp.*, Riverside, N. J.  
 Meeting Day—Third Friday.

## PITTSBURGH CHAPTER

President: A. W. BASS, *Westinghouse Electric & Mfg. Co.*, East Pittsburgh, Pa.  
 Vice-President: WILLIAM F. MARSH, *Lybrand, Ross Bros. & Montgomery*, 1601 Union Bank Bldg., Pittsburgh, Pa.  
 Vice-President: W. R. FISHER, *Union Switch & Signal Co.*, Swissvale, Pa.  
 Secretary-Treasurer: ANDREW H. BLASS, *Law & Finance Bldg.*, Pittsburgh, Pa.  
 Directors: *Meetings*—FRANK B. MAXFIELD, *McCrary Brothers Co.*, Swissvale, Pa.  
*Membership*—M. C. WALSH, *Pittsburgh Steel Co.*, 724 Union Trust Bldg., Pittsburgh, Pa.  
*Program*—W. H. CHEFFEY, *Union Switch & Signal Co.*, Swissvale, Pa.  
*Publications*—C. L. VAN SICKLE, Room 1, State Hall, University of Pittsburgh, Pittsburgh, Pa.  
*Publicity*—W. B. FUNDIS, 1330 Franklin Ave., Wilkensburg, Pa.  
*Research and Standardization*—A. G. FORSTER, *Mesta Machine Co.*, Pittsburgh, Pa.  
 Past Presidents: G. D. PIPER, *Westinghouse Electric & Mfg. Co.*, E. Pittsburgh, Pa.  
 H. S. KEYSER, *Dept. of Welfare, Commonwealth of Pennsylvania*, Harrisburg, Pa.  
 C. G. JENSEN, *A. M. Byers Co.*, Pittsburgh, Pa.  
 C. E. RESLEY, *National Radiator Co.*, Johnstown, Pa.  
 C. C. SHEPPARD, *Sheppard & Co.*, 932 Oliver Bldg., Pittsburgh, Pa.  
 A. ROY CARSON, *Pittsburgh Valve, Foundry & Constr. Co.*, Pittsburgh, Pa.  
 CHAS. REITELL, *Univ. of Pittsburgh*, Pittsburgh, Pa.  
 Meeting Day—Second Wednesday.

## PROVIDENCE CHAPTER

President: HARRY E. HOWELL, *The Grinnell Co.*, 260 West Exchange St., Providence, R. I.  
 Vice-President: A. PRESTON ROFFEE, JR., *The Providence Base Works of G. E. Co.*, 586 Atwells Ave., Providence, R. I.  
 Vice-President: FRANK BRIDGE, JR., *Hope Webbing Co.*, Pawtucket, R. I.  
 Secretary-Treasurer: HARRY A. KEENE, *The Grinnell Co.*, 260 West Exchange St., Providence, R. I.  
 Directors: *Meetings*—HENRY J. LEE, *Bryant & Stratton School of Business Administration*, Providence, R. I.  
*Membership*—LESTER F. MORSE, *Gorham Mfg. Co.*, Providence, R. I.  
*Program*—EDWIN J. LOUCKS, *Phillips Wire Co.*, P. O. Box 696, Pawtucket, R. I.  
*Publications*—CHARLES NEISON, *Universal Winding Co.*, 1655 Elmwood Ave., Auburn, R. I.  
*Publicity*—LEO DALEY, *Crompton & Knowles*, Providence, R. I.

*Research and Standardization*—JAMES BALDWIN, *Lorraine Mfg. Co.*, Pawtucket, R. I.

Meeting Day—Second Monday.

### ROCHESTER CHAPTER

President: EDMOND S. LAROSE, *Bausch & Lomb Optical Co.*, Rochester, N. Y.

Vice-President: IRVING W. BRIGGS, *Eastman Kodak Co.*, Camera Works, Rochester, N. Y.

Vice-President: G. P. SPALDING, *Burroughs Adding Machine Co.*, Rochester, N. Y.

Treasurer: EDWARD B. DINEEN, 415 Terminal Bldg., Rochester, N. Y.

Secretary: W. G. LYONS, *North East Service, Inc.*, 391 Lyell Ave., Rochester, N. Y.

Directors: *Meetings*—JAMES L. MCGEE, *Yawman & Erbe Mfg. Co.*, Rochester, N. Y.

*Membership*—JOHN D. SMITH, *Felt & Tarrant Mfg. Co.*, 328 East Main St., Rochester, N. Y.

*Program*—G. P. SPALDING, *Burroughs Adding Machine Co.*, Rochester, N. Y.

*Publications*—GILBERT W. SUTTON, *Pfaudler Co.*, Rochester, N. Y.

*Publicity*—IRVING W. BRIGGS, *Eastman Kodak Co.*, Camera Works, Rochester, N. Y.

*Research and Standardization*—CARL D. THOMY, 119 E. Main St., Rochester, N. Y.

Past Presidents: C. WALTER COAFMAN, *North East Electric Co.*, 379 Lyell Ave., Rochester, N. Y.

MYRON J. HAYES, *Eastman Kodak Co.*, Rochester, N. Y.

ZABET L. AUGUSTINE, *North East Electric Co.*, 379 Lyell Ave., Rochester, N. Y.

Meeting Day—Third Wednesday.

### ST. LOUIS CHAPTER

President: J. J. LANG, La Salle Bldg., St. Louis, Mo.

Vice-President: C. A. RENARD, *Ralston-Purina Co.*, 8th and Gratiot Sts., St. Louis, Mo.

Treasurer: F. F. SIMON, *Wagner Electric Corp.*, 6400 Plymouth Ave., St. Louis, Mo.

Secretary: G. C. HETLAGE, 354 Planters Bldg., St. Louis, Mo.

Directors: *Meetings*—O. W. NOLL, *Wm. R. Warner Co.*, 404 South 4th St., St. Louis, Mo.

*Membership*—A. HENDERSON, *Evans & Howard Fire Brick Co.*, 920 Market St., St. Louis, Mo.

*Program*—W. A. ROBERTSON, *Fisher Body Co.*, Union and Natural Bridge Aves., St. Louis, Mo.

*Publications*—E. F. CONNER, *Conner-Ash & Co.*, Arcade Bldg., St. Louis, Mo.

*Publicity*—P. F. HOLTZ, *Con. P. Curran Co.*, 102 South 8th St., St. Louis, Mo.

*Research and Standardization*—A. L. ANDERSON, *American Car Co.*, 1558 South Vandeventer Ave., St. Louis, Mo.

Past Presidents: A. F. BARNES, *Mercantile Trust Co.*, 8th and Locust Sts., St. Louis, Mo.

W. R. PEMISTER, *Monsanto Chemical Works*, 1724 South 2nd St., St. Louis, Mo.

Meeting Day—Third Tuesday.

## OFFICERS OF THE ASSOCIATION

## SAN FRANCISCO CHAPTER

- President: J. HUGH JACKSON, *Graduate School of Business*, Stanford University, Palo Alto, California.
- Vice-President: V. P. BROCKHOUSE, *National Carbon Co.*, 599 8th St., San Francisco, Calif.
- Vice-President: E. W. HODGES, *Pacific Gas & Electric Co.*, 245 Market St., San Francisco, Calif.
- Treasurer: H. H. WAIT, *Fisher Body St. Louis Co.*, Hillside Nr. Foothill Blvd., Oakland, Calif.
- Secretary: R. G. LAUER, *Castorlube Refining Co.*, 315 Montgomery St., San Francisco, Calif.
- Directors: *Meetings*—A. S. KAYSER, *Bass Hueter Paint Co.*, 2240 24th St., San Francisco, Calif.  
*Membership*—BENJ. E. JORDAN, *Burroughs Adding Machine Co.*, 22 Second St., San Francisco, Calif.  
*Program*—F. E. MILES, *Western Sugar Refinery*, 2 Pine St., San Francisco, Calif.  
*Publications*—C. T. TINKER, *California Culvert Co.*, 5th & Parker Sts., West Berkeley, Calif.  
*Publicity*—A. J. CARSON, *Lybrand, Ross Bros. & Montgomery*, 2 Pine St., San Francisco, Calif.  
*Research and Standardization*—H. J. COOPER, *Cerf & Cooper*, 519 California St., San Francisco, Calif.
- Past Presidents: FRANK A. MACHUGH, 277 Pine St., San Francisco, Calif.  
 A. G. STRONG, *Hood & Strong*, Standard Oil Bldg., San Francisco, Calif.  
 C. L. QUEEN, *Lybrand, Ross Bros., & Montgomery*, 2 Pine St., San Francisco, Calif.
- Meeting Day—Fourth Monday.

## SCRANTON CHAPTER

- President: A. W. CROSSMAN, *Penna. Appraisal Co.*, 604 Traders Bank Bldg., Scranton, Pa.
- Vice-President: WILLARD F. JONES, *Internal Revenue Dept.*, Post Office Bldg., Scranton, Pa.
- Vice-President: S. LEROY CHAPPELL, *Scranton Electric Construction Co.*, Connell Bldg., Scranton, Pa.
- Treasurer: JOHN C. SCHEUER, *Penna. Baking Co.*, P. O. Box 525, Scranton, Pa.
- Secretary: CARLTON J. WESTLAKE, *Penna. Coal Co.*, P. O. Box 553, Scranton, Pa.
- Directors: *Meetings*—MILTON M. COOK, *Great A. & P. Tea Co.*, Scranton, Pa.  
*Membership*—JOHN C. STURDEVANT, *R. F. Post Draying Co.*, 101 North 7th Ave., Scranton, Pa.  
*Program*—J. DONALD NOTMAN, 604 Traders Bank Bldg., Scranton, Pa.  
*Publications*—A. S. MAGOR, *Lackawanna Auto Co.*, 1627 Quincey Ave., Scranton, Pa.  
*Publicity*—HOYLE G. SLEELEY, *Scranton-Lackawanna Business College*, 635 Linden St., Scranton, Pa.  
*Research and Standardization*—ROBERT L. MAXWELL, *Agfa-Anseo Corp.*, Binghamton, N. Y.
- Meeting Day—Fourth Tuesday.

## SPRINGFIELD CHAPTER

- President: HAROLD R. PETERS, *Hillman, Peters & Leary*, 1252 Main St., Springfield, Mass.

- Vice-President: M. F. PETERSON, *U. S. Envelope Co.*, 21 Cypress St., Springfield, Mass.
- Vice-President: J. AIME LA VALLEE, *Westinghouse Electric & Mfg. Co.*, Chicopee Falls, Mass.
- Treasurer: ERNEST H. YATES, *Bausch Machine Tool Co.*, Springfield, Mass.
- Secretary: HENRY L. BURNETT, *Doubleday, Burnett & Snow*, 293 Bridge St., Springfield, Mass.
- Directors: *Meetings*—ROY E. BOOTH, *United Dairies System, Inc.*, Springfield, Mass.  
*Membership*—THEODORE F. WOODWARD, *Scovell, Wellington & Co.*, 293 Bridge St., Springfield, Mass.  
*Program*—JAMES E. CURRIE, *Westinghouse Electric & Mfg. Co.*, E. Springfield, Mass.  
*Publications*—FRED H. RICH, *Perkins Machine & Gear Co.*, West Springfield, Mass.  
*Publicity*—CLARENCE B. COOLEY, *Gilbert & Barker Mfg. Co.*, West Springfield, Mass.  
*Research and Standardization*—HOWARD K. LEATHERMAN, *General Ice Cream Corp.*, 134 Cass St., Springfield, Mass.
- Past Presidents: LEON M. LAMB, *Greenfield Tap & Die Corp.*, Greenfield, Mass.  
 JOHN A. SCANLON, *Springfield Provision Co.*, Chicopee, Mass.  
 JOSEPH CUSHING, 1559 Main St., Springfield, Mass.  
 FRANK S. HATCH, *Moore Drop Forging Co.*, Springfield, Mass.
- Meeting Day—Third Wednesday.

## SYRACUSE CHAPTER

- President: HAROLD H. HAIGHT, *L. C. Smith & Corona Typewriters, Inc.*, Syracuse, N. Y.
- Vice-President: WILLIAM A. BOYLE, *U. S. Hoffman Mach. Corp.*, Syracuse, N. Y.
- Vice-President: JOSEPH W. CROSBY, *Will & Baumer Candle Co.*, Syracuse, N. Y.
- Treasurer: M. W. LINDSLEY, *Oncida Community, Ltd.*, Oneida, N. Y.
- Secretary: WILLIAM E. WALKER, *E. C. Stearns & Co., Inc.*, Syracuse, N. Y.
- Directors: *Meetings*—GEORGE W. CHRYSTAL, *Brown-Lipe-Chapin Co.*, Syracuse, N. Y.  
*Membership*—F. R. GILFOIL, *Hills Bldg.*, 214 Montgomery St., Syracuse, N. Y.  
*Program*—CHARLES C. TALLMAN, *H. H. Franklin Mfg. Co.*, Syracuse, N. Y.  
*Publications*—LEROY C. MITCHELL, *Merrell-Soule Co.*, Syracuse, N. Y.  
*Publicity*—DELBERT K. PREST, *Pass & Seymour, Inc.*, Solvay Station, Syracuse, N. Y.  
*Research and Standardization*—C. MILTON CLARK, *Crouse Hinds Co.*, Syracuse, N. Y.
- Past Presidents: J. E. HALLIGAN, *H. H. Franklin Mfg. Co.*, Syracuse, N. Y.  
 E. F. KITENDAUGH, *Oncida Community, Ltd.*, Oneida, N. Y.  
 H. D. ANDERSON, *Scovell, Wellington & Co.*, Syracuse, N. Y.  
 J. R. TUTTLE, *Brown-Lipe-Chapin Co.*, Syracuse, N. Y.  
 L. W. FIELD, *Lamson Company*, Syracuse, N. Y.
- Meeting Day—Third Tuesday.

## TOLEDO CHAPTER

- President: W. E. MINER, *Willys-Overland Co.*, Toledo, O.
- Vice-President: H. B. SPEYER, *Champion Spark Plug Co.*, Toledo, O.

Vice-President: GEO. W. WELLS, *National Supply Company*, Toledo, O.  
 Secretary-Treasurer: JOHN P. VANCE, *The Caslon Company*, Toledo, O.  
 Directors: Meetings—F. E. HEIDRICK, *Owens Bottle Company*, Toledo, O.  
 Membership—W. C. LOK, *E. N. Riddle Co.*, 27 Broadway, Toledo, O.  
 Program—H. R. SCHAUSTEN, *Tillotson Mfg. Co.*, Blvd. and N. Y. C. R. R., Toledo, O.  
 Publications—C. O. LIGHTNER, *American Bottle Co.*, Nicholas Bldg., Toledo, O.  
 Publicity—H. J. BASH, *Toledo Edison Company*, Toledo, O.  
 Research and Standardization—C. A. BJELKE, *Doehler Die Casting Co.*, Toledo, O.  
 Meeting Day—Third Tuesday.

## TWIN CITIES

President: PAUL E. CROSS, *Waterman-Waterbury Company*, Minneapolis, Minn.  
 Vice-President: C. N. OSBORNE, *Minneapolis Knitting Works*, Minneapolis, Minn.  
 Secretary-Treasurer: ALEXIS CASWELL, *Manufacturers' Association of Minneapolis*, 100 Builders Exchange, Minneapolis, Minn.  
 Directors: Meetings—W. J. RIVERS, *Wyman, Partridge & Co.*, 1st Ave. N. and 4th St., Minneapolis, Minn.  
 Membership—STACY L. ANGLE, *Minneapolis Steel & Machinery Co.*, Minneapolis, Minn.  
 Program—H. O. FROHBACH, *Washburn Crosby Co.*, 200 Chamber of Commerce, Minneapolis, Minn.  
 Publications—J. A. BOULAY, 216 Frontenac Bldg., Minneapolis, Minn.  
 Publicity—R. W. B. RICHARDS, *Russell Grader Mfg. Co.*, Minneapolis, Minn.  
 Research and Standardization—R. M. WINSLOW, *A. M. Ramer Co.*, Grove and Olive Sts., St. Paul, Minn.  
 Past Presidents: H. A. BULLIS, *General Mills, Inc.*, 200 Chamber of Commerce, Minneapolis, Minn.  
 F. H. TUTTLE, *The Photoplating Co.*, 215 5th St., N. E., Minneapolis, Minn.  
 J. J. REIGHARD, *University of Minnesota*, Minneapolis, Minn.  
 H. F. OSTLUND, *University of Minnesota*, Minneapolis, Minn.  
 Meeting Day—Second Tuesday.

## UTICA CHAPTER

President: J. M. BROWN, *Barrow, Wade Guthrie & Co.*, Utica, N. Y.  
 Vice-President: E. L. A. FORSTER, *The Rome Company*, Rome, N. Y.  
 Vice-President: A. G. RHODES, *Frank J. Burgess*, Utica, N. Y.  
 Treasurer: S. A. HAGAN, *Bossert Corporation*, Utica, N. Y.  
 Secretary: MISS M. J. BEGGS, *International Heater Co.*, Utica, N. Y.  
 Directors: Meetings—J. T. HORNUNG, *Ganey, Hornung & Co.*, Utica, N. Y.  
 Membership—A. F. ORR, *Dunlop Tire & Rubber Co.*, Utica, N. Y.  
 Program—C. J. WURM, *Chas. Kellogg & Sons Co.*, Utica, N. Y.  
 Publications—A. D. JONES, *Remington-Rand, Inc.*, Ilion, N. Y.  
 Publicity—G. A. SEIGWART, *Hart & Crouse Company*, Utica, N. Y.  
 Research and Standardization—N. M. BROWN, *Rome Brass & Copper Co.*, Rome, N. Y.  
 Past Presidents: V. W. COLLINS, *Rome Wire Company*, Rome, N. Y.  
 C. M. GANEY, *Ganey, Hornung & Co.*, Utica, N. Y.  
 Meeting Day—Third Monday.

## WORCESTER CHAPTER

- President: FRANK TUPPER, *Frank Tupper & Co.*, 311 Main St., Worcester, Mass.
- Vice-President: PAUL S. SMITH, *Rockwood Sprinkler Co.*, Worcester, Mass.
- Treasurer: HARRY C. HEDENBURG, *Wyman Gordon Co.*, Worcester, Mass.
- Secretary: ROY H. COHN, *Norton Company*, Worcester, Mass.
- Directors: *Meetings*—RALPH W. BUMSTEAD, 51 Howland Terrace, Worcester, Mass.
- Membership*—EDMUND J. WHITEHEAD, *Worcester County National Bank*, 446 Main St., Worcester, Mass.
- PORTER W. LOWE, *Falulah Paper Co.*, Fitchburg, Mass.
- Program*—PAUL S. SMITH, *Rockwood Sprinkler Co.*, Worcester, Mass.
- Publications*—GEORGE S. SIMMONS, 356 Franklin St., Worcester, Mass.
- Publicity*—MAXWELL A. SHERMAN, *American Schaffner & Budenberg Corp.*, Worcester, Mass.
- Research and Standardization*—WALTER S. RIDLER, Royal Worcester Corset Co., Worcester, Mass.
- Past Presidents: A. S. MERRIFIELD, *Norton Company*, Worcester, Mass.
- WALTER J. FLEMING, *Crompton & Knowles Loom Works*, Worcester, Mass.
- TAYLOR P. CALHOUN, *Norton Company*, Worcester, Mass.
- Meeting Day—Second Thursday.



**SESSION I**  
**THE PROFIT TREND IN INDUSTRY**

**TUESDAY MORNING, JUNE 12, 1928**

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This Session Was Organized Under the Direction of  
**COLONEL ROBERT H. MONTGOMERY**  
Lybrand, Ross Bros., & Montgomery, New York City

JOHN T. MADDEN is a graduate of the School of Commerce, Accounts and Finance of New York University and has been connected with the school as professor of accounting for several years. He is now dean of the school. He is a certified public accountant and a member of many professional societies, among which are the American Economic Association, American Institute of Accounts, and the National Association of Cost Accountants. He is a director of the Institute of International Finance and the Public Fire Insurance Company. Among his books are: "Principles of Accounting" and "Accounting Practice and Auditing."

PAUL M. MAZUR is a graduate of Harvard University and a member of the firm of Lehman Brothers, investment bankers of New York. Among Mr. Mazur's published writings are the following monographs: "National Financing for National Advertisers," "Future Developments in Retailing," "Is the Cost of Distribution Too High?" and "The Logic of Department Store Organization." He also is the author of two books of recent publication: "Principles of Organization Applied to Modern Retailing" and "American Prosperity, Its Causes and Consequences."

TAYLOR P. CALHOUN graduated from Kentucky Normal School and, after teaching, worked as a bookkeeper in coal mining and lumbering companies. He graduated from the Naval Supply Officers School and was commissioned as Ensign in the United States Navy. After the close of the war he became Office Manager of Lever Brothers Company, Cambridge, Mass. He left there to join the Norton Company, where he has served in several capacities and is now Planning Engineer of the Grinding Machine Division.

VIRGIL JORDAN for the past nine years has been Editor of Publications and Chief Economist of the National Industrial Conference Board of New York. He is a frequent contributor of articles on current economic questions to newspapers and magazines here and abroad.

## THE PROFIT TREND IN INDUSTRY

THE opening session of the Ninth International Conference of the National Association of Cost Accountants convened in the Hotel Commodore, New York City, at ten o'clock Tuesday morning June 12, 1928, with C. R. Stevenson, of Stevenson, Harrison & Jordan, President of the Association, in the chair.

PRESIDENT STEVENSON: We will now declare the first session of the Ninth Annual Conference of the National Association of Cost Accountants officially open. On behalf of the National Board, I welcome you all, and I am glad you are here. I sincerely hope that the three days we are going to spend together in careful consideration of the various problems involved in our profession will be three profitable and fruitful days. Your National Board has striven very earnestly to arrange a program which will be timely, which will be of interest, and which will be practical in helping each of us to do in a better way the work which we are doing.

The past year has seen a further growth in our Association. At the present time, we have five thousand members. That represents the attainment of a goal which we have striven for, for a long time. It marks in my own opinion, a halfway stage in the development of our Association, for I confidently believe, before we get through with this thing, we will have more than ten thousand members.

The technical work of the Association through its Chapters during the past year has been of an unusually high order. Too much cannot be said in praise of the very earnest work which the chapter officers have done, and the splendid chapter programs which have been carried out. Much credit is also due the members of the National Board, and other men prominent in accounting costs and industrial accounting work, who have given freely of their time in visiting the chapters and helping them to carry out these programs which have been so successful.

Our session this morning is, I think, one of the most important ones that we have ever had in this association of ours. As you

know, the ideal of your National Board is that this Association is, first of all, a professional association of the men engaged in industrial accounting. Industrial accounting is a profession in exactly the same way that law, medicine, or any one of the various branches of engineering is a profession. The men in other professions are joined together in their Bar Associations, Medical Associations, and the various Engineering Associations, and so are we, who practice industrial accountancy, joined together in this, our professional organization.

The first fundamental purpose of our Association is to furnish a background for exchange of ideas for the development of each of us as individuals in our work. Secondly, we have the great ideal before us of serving effectively the industries of this country. More and more, those of us who are studying the trends, the conditions in American industry, are becoming convinced that the continued success of American industry depends entirely on the quality of management, and industrial accounting is the most important machine that management has to work through. Thus we have our other function of serving the industries of the country and, through the industries of the country, the community as a whole.

One of the things that has caused much discussion and which presents a great deal of difficulty to men engaged in management of the industrial properties is the profit trend, which is a reflection of the intensive competition that all industry has suffered from for the last five years. Your National Board feels that they were very fortunate in securing the service of one of the great leaders in our profession to handle this session. It is really needless for me to introduce Colonel Robert H. Montgomery, for every man engaged in industrial accounting, general accounting, or industrial management, knows Colonel Montgomery. He is a member of the firm of Lybrand, Ross Brothers & Montgomery. He is a Professor of Accountancy at Columbia University, and, I think it is fair to say, the greatest authority on his subject in this country. Colonel Montgomery has consented to bring together the material, preside at, and handle our session this morning, and it gives me great pleasure to turn our meeting over to Colonel Montgomery.

CHAIRMAN MONTGOMERY: Mr. President, Guests and Fellow Members of the Association: I can assure you that I appreciate all of the compliments which your President has be-

stowed upon me, but the real reason that I am here this morning is that I was intrigued by the subject which we are about to discuss. I think that Solomon, Henry Ford, or somebody said, "A little knowledge is a dangerous thing." I had heard a great deal about the ascending or descending trend of manufacturing profits, and I knew so little about it that I thought I was in the dangerous stage. While sometimes it is fascinating to play with the dangerous stage, if it affects our professional life and our own personal activities, we like to investigate. It can do us no harm to discuss the subject this morning. I think the only harm that could come from our deliberations would be generalizations, which we might accept as truths.

I think this Association through all of its members and through all of its activities has indicated that it has a great passion for facts and the application of facts. I think probably in the early stage, some one founded the organization because he knew the story about the apple woman who sold six apples for five cents, and paid one cent each for them. When asked by a customer how she did it, she said, "Only because I sell so many." I think some members found themselves working for concerns that were fairly well satisfied with themselves because they did a large gross business, but, in inquiring into the business, they were shown that perhaps it wasn't so good after all.

I think another inaccurate generalization would be to ignore some of the things which have been going on during the last few hundred years. We hear of the depression in certain industries as if those industries should be taboo so far as investment is concerned. A few weeks ago I was talking to a banker downtown. I told him a certain woolen manufacturer thought of selling some securities. He said it was absolutely impossible, that the woolen business is just about gone and that people wouldn't buy the securities of such concerns. I said this man had been able to make several million dollars in a year.

"Well," he said, "I don't know about that."

Yesterday I received a circular of old books, and in it there was a book entitled "The Golden Fleece," and in describing the book, it speaks of "the present decay of our woolen manufacturers." The book was published in 1740. In other words, in 1740, they were very much concerned, just as they are today, that the

woolen trade was decaying. I suppose a great many of them thought it had decayed or passed out just as many of our friends do today.

One of my own early experiences over in Philadelphia was in the wholesale grocery business. I had two friends, one of whom happened to be at the head of one of the large wholesale grocery businesses, and the other at the head of the greatest competitor of the other concern. Both were leading concerns, and they seemed to be getting along pretty well for a number of years, but pretty soon one commenced to slip. The management seemed to be all right. Their name and prestige were absolutely all right, and yet over a period of years, to make my story short, one of them was highly successful and the other was highly unsuccessful. I tried to study the reasons, because they were friends of mine. They had access to the same markets, both in the buying and selling fields. They didn't have any of the drawbacks that are obvious and yet, in the long run, one was successful and the other was unsuccessful. So, you can take the cotton or any textile manufacturers, or the oil or leather business, and it is perfectly true that a generalization based upon an entire industry might greatly mislead us. I don't know whether or not this Association has a slogan, but if it had a slogan I wish it might be this, "Generalizations are not worth a damn!"—(including this one). I have used five minutes of the total of fifteen minutes which I am allowed during the entire morning. I am going to devote the other ten minutes, when I speak from time to time, to lead this session, if I can, into something constructive, so that if, out of the compilation of facts which will be laid before us and out of the conclusions, remedies, and suggestions that come out, we get something constructive and keep away from generalizations, no harm will have come from this session. It is an interesting subject, and I think that some good may be attained.

The compilation, which is entitled the Profit Trend in American Industry (see pages 339 et seq. at back of book) was prepared by the Research Department of the Association, in charge of H. A. Bullis, of the Washburn Crosby Company. Is Mr. Bullis here? He is a modest man, I know. He told me he would be here this morning. However, this is a tremendously fine piece of work. I think it is of outstanding importance, and, when you get the report as a whole, you will be intensely interested in it. I believe that you should make it your business to get a copy of the report. I don't know how the Association proposes to publish it, but I think you as members

of the Association should see to it that the report is published, so that after the meeting is over, you will have a chance to read and digest it. Before this session is over, if I don't see Mr. Bullis, I wish somebody else would bring him in.

In the meantime, the report has been digested by Dean Madden of New York University, and he will present to you a summary or synopsis of it, after which it will be discussed. The discussion is open to all of the members on the floor, and to all visitors. You know Dean Madden much better than you know me.

PROFESSOR JOHN T. MADDEN, *Dean, New York University School of Commerce, Accounts, and Finance*: Mr. Chairman and Members of the National Association of Cost Accountants: Presenting another man's paper or study is a job about as unsatisfactory as trying to make love to another fellow's best girl. My experience is, it doesn't satisfy either party! Mr. Bullis has worked with these figures, has labored with them, and knows them in a way that it would be impossible for anyone else to know them without a considerable period of time spent in digesting them.

The Colonel has said I digested these figures. I would not have time to digest this report during the period that I have had it in my possession. In fact, an attempt to do it as rapidly as that would result in mental indigestion. He has also spoken about the necessity of avoiding generalization. Some of you may recall the story of the ship captain and the mate, both of whom were very competent sailors. One day the mate "tipped his elbow," so the captain (who had a passion for facts) in writing the log that day wrote, "The mate was drunk today." On the next watch, the mate was reading the log book and saw the note. He went to the captain and said, "Captain, I wish you would take that out. That log book will be read by the masters, the owners of the vessel, and I will lose my job and never get another ship."

The captain's reply was, "It is a fact, is it not?"

The mate said, "Yes."

So the Captain replied, "Then it will have to stay there."

When it was the mate's turn to take over the watch he wrote up the log book and made the entry, "The captain was sober today."

When the captain saw that, he said, "Is that anything to put in the log book!"

The mate said, "It is a fact, isn't it?"

The captain replied, "Yes."

Therefore, we have got to be careful with reference to facts.

Mr. Bullis has prepared a massive thesis of something like 130 pages, with a great many statistical tables, so that in the time allotted to me I will merely attempt to hit the high spots.

. . . Dean Madden then proceeded to read excerpts from the report, specifically pages 343-344 on which he commented as follows:

"In brief, then, that shows you the outline of the material which Mr. Bullis had to digest and consider in preparing this study." Reading pages 345 and 348, Dean Madden said, "Mr. Bullis then makes mention of certain difficulties that are involved in considering the income tax returns, the tendency being for companies, I suppose, not to report more profits than they have actually made. In other words, it is like the young man who was being considered for employment. The employer was almost to the point of deciding to hire him, and he said, 'Young man, I would like to hire you, but you don't know enough about double entry bookkeeping.'

" 'Oh yes,' he replied, 'I know it very well. In the last place I worked, we had triple double entry.'

" 'Triple double entry, what do you mean by that?'

" 'Well, we had one set of books for the actual partner. Those were true. Another set of books for the sleeping partner showing smaller profits, and another set of books for the income tax inspectors showing no profits at all.' "

"That is the qualification on the income tax data Mr. Bullis refers to."

Reading the material on page 360, Dean Madden then summarized a portion of the report as follows:

"Mr. Bullis then supplies analyses of different lines of industry, following the classification of the Census Bureau, which classification is, of course, also used by the Bureau of Internal Revenue in its reports. These reports (except, of course, in certain lines of industry such as the oil and cotton industries, which have been passing through very severe periods of depression) seem to bear out conclusively the decision or the conclusion which Mr. Bullis arrived at, namely, that the profit trend was increasing. However, it is interesting to note that the replies of individuals in these dif-

ferent lines of business seem to be somewhat at variance with the figures reported in the statistical studies. For example, in the case of the brick industry, which shows a rather satisfactory increase in percentage of profits, the percentage in 1923 being taken as 100, in 1927 on the basis of 1923 it is 114. Here is something the Secretary of that Association has to say: 'The profit trend in our industry has been downward, etc. (See page 388.)' "

Referring to the material on pages 361-400, Dean Madden said:

"Now, as I have read this statistical study for various lines of industry there is that significant phase that, while figures seem to show an increasing percentage of profit based upon 1923, the observations of those who have commented have all been adverse and, in most instances, they complain about the critical situation. Some of them emphasized the need of better information, others emphasized the need of better costing, and still others emphasized the need of better management. Here is, for example, the criticism of a manufacturer in the steel industry. He says:

" 'The cause of the shrinkage in profits . . . is the tremendous expansion during the war and immediately thereafter, so that when the country settled down to a condition of normalcy the problems developed among manufacturers as to how to keep their plants running full, and it appears that most of them have disregarded the fundamental principles of business and ignored entirely their costs, taking business at whatever price was offered. . . .

" 'We attribute this (our profits remaining fairly uniform) to the fact that we have religiously clung to the old-fashioned theory that a business must have a profit to exist, and we have refused to accept business that did not show us a fair return. If all manufacturers would follow a similar practice, they might have a bit less business, but many of them would operate at a small profit rather than a loss.' "

After reading portions of the report, excerpts ending on page 433, Dean Madden closed his comments with these remarks:

"My time is passing, and I would like therefore to quote Mr. Bullis' final conclusions.

The results of this investigation of the profit trend in American industry during the five years from 1923 to 1927, inclusive, show that although profits have declined for all companies in certain industries and for

some companies, especially the smaller units, in many industries, profits in industry as a whole have not declined, but have been on somewhat of an upward trend. This upward trend has been confined almost exclusively to the large firms.

It appears, however, that it will be increasingly difficult for individual companies to maintain their present proportion of net profit unless the executives conduct their business according to certain definite standards:

### 1. ELIMINATION OF WASTE.

The wastes of time, energy, and materials should be eliminated by

- (a) Educating the management in business fundamentals, so that administrative waste will be reduced to a minimum,
- (b) Keeping down expenses in every department of the business,
- (c) Standardizing products and methods,
- (d) Adopting sound credit policies, and
- (e) Utilizing all by-products in the most profitable manner.

### 2. PRICE MAINTENANCE.

Prices should be maintained honestly and intelligently so that the business can be conducted at a profit. It is economically unsound to do business at a loss. Trade associations under the administration of a strong director assist materially in maintaining prices above actual cost.

### 3. CORRELATION OF PRODUCTION WITH DISTRIBUTION.

Production should be adjusted to demand so that a manufacturer will produce only what he can sell at a profit.

In order to eliminate waste, maintain price, and correlate production with distribution, it is absolutely necessary to make use of modern cost accounting, budgeting procedure, and research. It is of little use to have proper cost accounting and industrial records unless careful consideration is given to these records in the current conduct of the business.

There are so many factors beyond human control which influence business, such as crop and weather conditions, wars, political changes, economic changes, changes in styles, and fads and fancies, that it is imperative for the executive to use modern tools of management in order to operate his business on a profitable basis.

The investigation reveals that there are still profits for those businesses whose executives are keen enough to secure them and that in many industries these profits have been increasing in recent years rather than declining. Intelligent hard work adjusted to current opportunities and economic situations through the use of modern industrial accounting will produce satisfactory results from a profit standpoint.

"I apologize to Mr. Bullis for the very inadequate presentation of his exhaustive study. I sincerely hope, however, that all of you will insist upon getting a copy of this study and fairly devouring it, as well as digesting it. Thank you."

CHAIRMAN MONTGOMERY: I think you will agree with me that Dean Madden has made a very comprehensive synopsis of the report, and that you have before you the high spots, which will now be discussed. In the report, Mr. Bullis makes several references to the monthly circulars of the National City Bank. Dean Madden read one of them. In the circular which came out last week from the City Bank, we find this: "It is well known among business men that although the volume of business has been large in recent years, the margin of profit as a rule has been small," so you see the generalization to which I referred at the beginning continues up to last week.

I think we must recognize today that the banker, and particularly the investment banker, has an influence which is increasing in its importance. I remember in the old days when I started in accounting work, when we heard that a concern was in the hands of the bankers, we knew that the business was about over, that it was only being kept alive to see what could be liquidated out of the assets. In very few cases was it expected that there would be a successful reorganization. There were some notable ones, but, as a rule, when concerns went into the hands of the bankers everybody felt sorry for the concern. Through a period of years, I think conditions have entirely changed. I think that as the investment bankers have taken an increasing interest in industrial management, the trends toward consolidation, the trends toward expansion have been very helpful to business as a whole. A few days ago, an investment banker called me up and told me that he had been elected to the board of directors of a company, the securities of which had been sold by his firm. The earnings had been very satisfactory during the period that had been reported upon in the circular. He attended the first meeting of the board of directors and asked for a report for the month before, and they told him in that business they couldn't give him a report for the previous month, the business being of such a character that they couldn't make monthly reports. He said to me, "Is that so?"

I said, "probably not."

The only point I want to make is, that banker on that board is going to be a very helpful influence, because he is going to insist on better accounting methods. He is going to insist on more intelligent reports and, in the long run, that business which has

been successful may owe its continued prosperity to the interest of the banker.

We have with us this morning, Paul M. Mazur, who, since he left college has gone into the banking business, and has also made a special study of organization, and particularly organization as applied to modern retailing. Mr. Mazur has taken an advanced position on the functions of the comptroller, and that, I think, is of very great interest to us. He has expressed the opinion that the comptroller should be not merely a supervisor of records of the transactions of the business, but also a factor in the management. Mr. Mazur has published several books, one of them being "American Prosperity—Its Causes and Consequences," which has come out this year. He has made such a study of the subject which we have before us this morning, that I think we are particularly to be congratulated on having Mr. Mazur with us. I take great pleasure in introducing Mr. Mazur.

MR. PAUL MAZUR: Colonel Montgomery, Gentlemen: I am glad we have reformed a little bit, at least, from the old days when the banker used to be a complete pirate, but you must not forget that the banker's chief alliance today is the accountant, because we can't sell securities unless we get a good certification from you. As this same evolution has taken place in the mind and attitude of the banker, it is also slowly taking place in the mind and constitution of the accountant, because I think in some respects you were almost as chary as we are and as we were.

I am glad to be here, because it has always been on my chest—the desire to tell accountants something (whether I were right or not) which is this: You have put too much emphasis on the analysis of the corpse and too little emphasis on the prognosis of a well patient. You, the accounting profession as I see it and as we come in contact with it every once in a while, are very likely to put too much emphasis on the past. The accounting profession takes too much credit for itself because of the fact that it has kept excellent reports of what happened in 1927 rather than what is going to happen in 1928.

I am interested in trends. I think all of you are, but a trend for the sake of a trend isn't of much value unless we can use it to predict a future trend. Most of us live not on what we had to eat yesterday, but what we have to eat today; and we continue

to live on that until we get sufficient nourishment tomorrow. A report of the past is always helpful provided you don't put too much emphasis upon that which happened in 1921, 1922, or in 1927.

In your analysis of profits, it is absolutely of fundamental importance that you find out why profits are not decreasing. In the actual fact that the profits are not decreasing, there may lie a germ which will destroy the future. A business or a group of businesses might be increasing the total profit, and the actual percentage or profit per dollar of sales may be decreasing; or even the percentage of profit to sales may be increasing, and still the condition may not be a healthy one. If the increase in profit has come as a result of the decrease in manufacturing cost, the obvious question is, Can the decrease in manufacturing cost continue? If the increase in percentage of cost has come as a result of decreasing selling costs, the question is, Can that decrease in selling costs continue?

All of us are interested not necessarily in what the general trend has been, but what will be the specific trend of a particular industry in which we happen to be interested. We try to find the basic causes of the conditions which are likely to confront us. In the report Dean Madden read, there was a reference to the statement of some manufacturer that, because industrial capacity had been increased during the war, business had attempted to obtain volume at any cost. I don't think that statement is exactly true, but in a measure it is true. I think what happened in the last five or six years is, that we have obtained the increased volume through the extraordinary distributing system which we have developed in this country.

It is a popular sport these days to berate distribution because of its "wastefulness." I think Dr. Klein said it amounted to \$8,000,000. Not one of us can really visualize what that figure means. We have been brought up in the last ten years to the belief that production was the white-haired boy, and distribution the unfortunate pirate that knocked down all the blocks so carefully erected by the white-haired boy. The very fact that distribution has been wasteful, in the psychological sense, is in my opinion the reason for our ability to manufacture and sell more today than we did years ago. Unfortunately, the process of increasing sales is likely to continue to decrease the benefits of mass production; and mass production has made us into a nation with the lowest cost

for producing, in spite of paying the highest wages of any country in the world.

In this process of developing mass production, obviously the thing of cardinal importance is sales. No manufacturer is desirous of creating mass production in order to fill his warehouse with goods, and so he must have sales. Sales require effort. Sales require something that has been called by various names—the “philosophy of discontent” will do just as well as any of the others. The idea is, the American public has been educated to look upon what is old as no good. The public must have what is new. That obsolescence factor which is nothing more than “style factor” converted into an accounting phrase, without doubt has been the basis of the elimination of saturation of markets. In the case of automobiles, we have arrived at a point where a car, although three, four, or five years old is just as good, just as useful and valuable as a one-year old car, still it is discarded for a new one. Style, we all know, will create a desire; it is a social force which impels us to buy the new car.

I think this fundamental phenomenon goes back to the Declaration of Independence. Some wise individual, some good business man told us Americans (those here at the time) that all men are created equal. So, today, we really believe we are created equal. Strictly speaking, of course, that is not true. We do not stop to analyze why we are not created equal. Nevertheless, there is enough truth in it, particularly to women who are desirous of having what every other woman has, to build a tremendously powerful force. That philosophy of desire has built a tremendous background for sales. Discontent has been the primary cause. The elimination of depreciation and introduction of obsolescence and rapid obsolescence have been the bases for renewal of saturated sales markets.

In that particular creation, the creation of that particular force, mass production suffers a very real difficulty. All of us know, whether we are accountants or not, that mass production depends upon standardized products and continuous production. Those two elements are strictly necessary for the economy of production. Ford is a great example of what can be done with those two elements.

But, if the sales organization insists on new styles all the time, standardization and continuity of production become impossible. The development of obsolescence as an answer to the demand for

large sales has created a force which is dangerous to mass production. Obviously it is equally true that the winning of larger and larger sales costs more and more per dollar of sales. Increased selling costs offer the advantage of the economy of mass production.

If these conflicting forces continue unabated, undoubtedly they will destroy mass production, distribution, and the basis of prosperity. The answer to the problem of conflict lies in a compromise, a balancing of forces, a balance of the advantages of mass production against the disadvantage of high-cost distribution, and the balancing of the disadvantage of standardized production against the advantage of effective sales methods. There must be a balance between continuous mass production and the risk of creating large inventories.

To do all that, to balance these factors properly is to do what I call merchandising, what the retailer calls merchandising. It is necessary to have knowledge; it is necessary to have control. That control must be dynamic, not static. It isn't satisfactory to tell me if I am a director that last month the company made so much profit, because last month is over. Tomorrow is what I must know about—this month and what is likely to happen next month.

Until the accounting profession puts emphasis on the present and future as well as on the past, it cannot give proper guidance to American industry. You can't protect industry against the problems and dangers that confront it unless you do this. In the final analysis, this great compromise between the advantage of production and the risk of distribution will depend upon human judgment. Statistics and machines are, after all, lifeless things if they are not used by people. But the first and the best requirement is the creation of the machinery which will be useful. The manufacture of the machinery lies primarily in hands like yours. If you can create mechanism which can be used, undoubtedly you have contributed something more than you would without it. The best mechanism is designated by the term "budgetary control," except that the word "control" is not a good one. Control is negative. The whole problem confronting industry is constructive, not entirely negative. However, I can't think of any other phrase, so we will call it budgetary control. So, the matter of expense, production, and sales is a part of your problem in budgetary control.

But do not forget that even if you create a set of records that represent a good file of material, then that advantage you offer is

not any better than that of any historical society. I don't think your function in life and in business is that of historian entirely.

However, after you have created the machinery, your job is not complete. Let me visualize if I can a problem for you, a problem which is not only imminent but present. Let us assume we are sitting together in a meeting of the management of a large company. We have present the manufacturing superintendent, the sales superintendent, the general manager, the president or head of the business, and the unknown person who we will call the accountant.

The manufacturing department insists that in order to manufacture A, B, or C (whatever item it is), it is necessary to manufacture so many units per month and have a standardized product. The sales organization insists, that, in order to sell the necessary items to obtain the dollar volume, it receive not a standardized produce, but some of this and that—a thousand items, and then next month a complete change and a new thousand items, saying that unless that particular company follows this plan, there would be no possibility of sales.

The manufacturing department says, "If you do that, there will be no possibility of profit because we can't manufacture within 20% of what it costs to manufacture now."

It obviously is a conflict. This problem isn't academic, it is real; it is one that happens all the time. Now, between those two points of view there must be a compromise. There must be a fulcrum on which they can be balanced, and you particular gentlemen should represent that fulcrum. You should determine what the advantages of each unit of manufacturing represent in terms of economies of manufacture. You should determine what advantages or disadvantages there are in each unit of sales, and you should determine what the best balance between one and the other is in order to obtain the best net profit. So, if you find that it is wiser to reduce sales volume in order to increase profits, your point of view should be the guiding one. You should not be interested in going after great American and Olympic industrial records for increased volume. You should not be interested in the lowest cost production for its own sake, but you should be interested in the greatest net profit. It isn't your responsibility to determine the actual policy, but it is your responsibility to point out the proper compromise between those forces and to determine its effect.

Again, in this same theoretical meeting, the accountant might

fill one or two places—as an accountant, and as such he just presents facts; and as a comptroller. If we use the word in what seems to me its literal sense, he must do something more than make this presentation of facts. He must reach positive and definite conclusions which are justified by the facts. He must equal all other forces of management with the exception of the top executive, in whose hands the final destiny of the business lies. The accountant-comptroller should understand the interpretation of the records, and, if he can use judgment upon that interpretation instead of interpolating these records for someone, then industry will be the gainer.

My plea is not that the comptroller be established or created as a new function in industry. It isn't actually a new function at all. My plea is that he understand that he has something more to do than present pleasant or unpleasant epitaphs. His job is not creating eulogies, it is in creating this machine of control and the actual directing of that machine.

As time goes on, I make the prophecy that the problem of merchandising will become more and more serious. Europe is becoming a factor in American production. The problems which American industry will have to face will be far more difficult than those which she has had to face in the past. This problem of increasing volume creates the problem of increased selling expense; and the necessity of creating new styles will create inventory risks. There is the elimination of the profit advantages of low cost production in the high cost of high pressure distribution.

I don't advocate the elimination of high cost distribution, but I do advocate a compromise of the two, high cost distribution and low cost standardized productions. The control of inventory lies fundamentally in the hands of the comptroller. If the comptroller is doing a serviceable job and directing the industry along safe lines, I think he can, as well as the Federal Reserve System, eliminate at least some of the huge peaks and valleys of our industrial depressions and industrial prosperity. So make your machine, that industry can use it for actual operating problems—a machine which the management can use to solve the problems confronting it today and tomorrow. Then create in your schooling of the individual accountant in the business, a point of view which will allow him to interpret these control facts. Then do your best to educate the American business leaders to understand the function of the

comptroller, and to establish as a coördinate unit in the top management, this control element, a man who will not only have something to say, but the right to say it; who will be able to checkmate the action of the sales department or the manufacturing department, subject only to the veto of the final compromise point of view at the top.

Some people say to me, "you present a picture of conflict in business, not the idea of let's get together, boys." In a sales organization, it may be very good and a very fine thing to create selling enthusiasm and say, "Hurrah, boys, hurrah!" but, actually, in industry, there is conflict between the points of view of the various departments. There is usually a conflict between the manufacturing department and the sales department. The strength of industry lies in the recognition of, and the actual protection of, the individual and separate points of view. The trend of profit will depend on that protection; we must not submerge sales, manufacturing, or control by the overwhelming power of any one of the three.

My interest lies in future profits. I think that the destiny of future profit lies fundamentally in the development of the merchandising point of view in American business, or anything you want to call it. That development is an especial responsibility of yours. If you will allow me the privilege, I should like to leave in your hands that really important element in the destiny of American business. Don't let us neglect the fact that we are interested in the future. Past trends indicate that business has been good—fine. But the real problem is: Is business *going* to be good? And whether business will be good or will not be good in terms of net profit depends as much upon you as it does on mass production or mass distribution.

CHAIRMAN MONTGOMERY: I hope that all of you have derived as much pleasure and profit from Mr. Mazur's address as I have. Among the many constructive and very concrete suggestions, there is one that I am going to apply almost immediately. As soon as I leave here today, I am going to call up my friend the recent director, and I am going to tell him that, when he goes to the next board of directors meeting, he should again say, "I want to know what we did last month," and that he must also say, "I want to know what we are going to do next month." I think that

can be accomplished. I think that the members of the Cost Association have been working towards that.

I believe we owe a debt of gratitude to Mr. Mazur for coming here this morning. He has to catch a train in a short while, and for that reason he will not be able to stay for the general discussion, but it has occurred to me if any one of you would like to ask a specific question bearing on his very interesting presentation of the subject, I know Mr. Mazur would be glad to answer any specific question, or comment on any particular problem which might be raised at this time. Does any one have a question which he would like to ask?

MR. CHARLES W. BIRTWELL, *Stable Money Association, New York*: I should like to ask the last speaker in what way he recommends we should take account of the varying value of the dollar, the purchasing power of the dollar.

MR. MAZUR: You can't take account of it at all. I remember when I was in school, we were taught that although gold didn't have a standard value or permanent, fixed value, the fluctuation was so small it was best neglected. Then the war came along and we discovered it wasn't. When you mention "take account of the varying value of the dollar as such," I say don't take account of it at all, although you take account of it in terms of prices. You say the average price of a particular dodab I sold last year was 49 cents or 50 cents, and this year it is 40 cents, that creates the necessity of selling more in order to maintain the volume. That is exactly what happened in this country since 1921. Prices have gone slightly downward and we have had to sell more units than before. That is the result of the fact that the value of gold has been increasing. Actually you do take that into account, but not in terms of gold. You take it into account in terms of prices or volume.

If gold as a factor hadn't any interest, you would have exactly the same problem in barter. It is really a problem of units of production and sales. You must convert dollars into terms of units.

Although the retail business is probably ancient as compared to manufacturing, in the technique and science of production and in the science of operation, retailing is in its infancy. But, in one thing retailing has done an excellent job, and that is the science of control. Retailers are now developing as you probably know

(if you don't I advise that you study enough of modern retailing to find out what they are doing) what is known as unit control, eliminating dollars as fast as they can, and working on the basis of units. Obviously, if prices decreased, you would have to sell more units. Measuring everything in the sale of more units, the problem can be reduced to, "Can we sell 1,000,000 units? What does it cost to sell? Can we sell 1,200,000? How much extra will it cost to sell the 200,000? How far can we go in extending the market and increasing advertising, or giving special premiums and discounts? Will the increased cost of selling offset the decreased cost of manufacturing 1,200,000?"

Then the management should determine whether or not it is advantageous to build the volume up to 1,200,000 at a cost of 5% on the entire amount or stick to 1,000,000 for which the cost of sales is 5% smaller. I would say forget the varying value of the dollar and think only in terms of production, sales, and units. I have attended a good many meetings and, to my knowledge, the matter is not spoken of as the value of the dollar, although it is talked of in terms of market problems. I think accountants should use the same language. I suggest that you continue to use that same language.

CHAIRMAN MONTGOMERY: Are there any other questions?

MR. MYRTILE CERF, *Cerf & Cooper, San Francisco*: I would like to ask whether there is an element of danger in the suggestion that you made, of the accountant attempting to manage the business rather than presenting facts or trends to the management.

MR. MAZUR: A comptroller is not permanently interested in economy in sales or manufacturing economy, he is fundamentally interested in the net profit. The problem of measuring the advantage of production against the cost of distribution and correlative factors created by the high cost of distribution is a problem that can, in my opinion, be solved best by the comptroller type. Even if there are some small risks, I think the benefits to be obtained are sufficiently greater to make it perfectly safe for you to proceed.

CHAIRMAN MONTGOMERY: Thank you. I think we should give Mr. Mazur a rising vote of thanks for coming to us this morning and giving us this interesting presentation.

. . . The audience arose and applauded. . . .

CHAIRMAN MONTGOMERY: While Mr. Mazur was talking about the sales department, the manufacturing department, and the conflicts, I was thinking back over a good many years. I brought to mind a great many instances in which concerns that had gone on the rocks had been dominated by the sales department. I think, in many of those instances, a comptroller with this compromise principle in mind could have exercised a very helpful and constructive function.

I understand that Mr. Bullis has arrived and I want him to stand up.

MR. HARRY A. BULLIS: I wish to thank Dean Madden for his excellent presentation of the report "The Profit Trend in American Industry."

It seems to me that the most important factor in American business is not capital or labor, but efficient management. I think that efficient management has three qualities: first, the quality of vision, the faculty of seeing the future trend of industry; second, the quality of courage, the valor to go ahead and adjust the enterprise to accord with the future trend; and third, the ability to work hard.

A little story comes to my mind. Two little frogs were sitting on a table. They saw a pitcher of cream and jumped in. After they had drunk all the cream they wanted, they found that the pitcher was round and they couldn't get out. One frog gave up and sank to the bottom of the pitcher; but the other frog, who had the three qualities of vision, courage, and ability to work hard, thought that he would kick as long as he could kick. So he kicked and kicked and kicked. He felt himself slipping and kicked still faster. Finally he felt something hard under his feet, kicked still faster, churned the cream into butter, stood on top of the butter, and jumped out of the pitcher. That frog had the vision to see that he should kick, the courage to start kicking, and the ability to continue to kick.

There are plenty of profits to be secured by organizations whose executives have the three qualities of vision, courage, and the ability to work hard.

CHAIRMAN MONTGOMERY: I think we all know the importance of inventory control. We all know that it is not a generalization, but it can be adapted to daily use. We have just heard from Mr. Mazur the importance which the investment banker places on inventory control. We are fortunate in having with us this morning Taylor P. Calhoun of the Norton Company, who has made a special study of this subject, and I am very happy to be able to introduce him. Mr. Calhoun.

TAYLOR P. CALHOUN: Mr. Chairman, Members: The thing that saved the day for me is that I am following Mr. Mazur. When I came down this morning, I could not see any approach to the problem of inventory control in fifteen or twenty minutes. It is too big a subject to talk about technically without all kinds of elaborate details and forms running beyond the possibility of twenty minutes. It is too big to talk about generally without getting lost in a maze of generalization, against which every previous speaker has warned.

In my way of thinking, Mr. Mazur laid the groundwork for this talk on inventory control, because he has given you the philosophy. I don't have to monkey with that, and the technique you already know. That doesn't leave much for me to do. It would be as futile for me to try to develop the subject in fifteen minutes as the proverbial search of the blind man in a dark room for a black cat if it wasn't there. So, I will have to steer in between the philosophy laid down by Mr. Mazur and the technicalities with which I presuppose you are all familiar, and make a kind of compromise presentation.

That reminds me of the difference between philosophy and technicality. Mr. Mazur presented our management problems as a philosophy. Someone else tomorrow will present them as infinite technicalities in our standard cost meeting. A philosopher is characterized as a man who learns less and less about more and more until he knows nothing about everything. If you tried to read Dr. Will Durant's *Story of Philosophy*, I am sure you will agree. The technician, on the other hand, learns more and more about less and less until he knows everything about nothing. So, in having the philosophy presented by Mr. Mazur and the technicalities known by you, I don't have to get into either one of those predicaments.

The subject of inventory control as I propose to present it has

nothing to do with taking inventory or counting stock, but has to do with the total investment.

In Mr. Bullis's summary, he brought out as the third item of the corrective measure "correlation of production with distribution." So he, too, laid the groundwork for the subject of inventory control. That is what it is, the correlation of production with distribution, except that I don't favor the word distribution. I should think it more correct to say "demand." The correlation of production with demand. There is a lot of distribution going on that really isn't filling demand. It is piling up on the retailer's shelves or in the consumer's home. That isn't demand, that is distribution. I think the word "distribution" is a rather dangerous term. Sales organizations use the term all too freely as a substitute for "demand."

When we started learning bookkeeping and cost accounting only a few years ago, the thing we learned first was that cost comprised labor, material, and overhead. We advanced out of that stage. They couldn't interest us in that now. We found another triumvirate. An industry or enterprise was alleged to be operated by three factors—capital, labor, and management. So that triumvirate succeeded in our philosophy the original idea of labor, material, and overhead. I claim that there is another triumvirate which now succeeds the second for the more advanced accountants in the industrial field, and that is: enterprise consists of production, demand, and control. That is all enterprise consists of—production, demand, and control. Think that over.

To go back to Mr. Mazur's hypothesis, the philosophy of mass production, on the way down on the train I happened to be looking back over the growth of industrial management, and I saw that in 1890 (which isn't so long ago) the National Cash Register Company had increased its volume to 14,000 units a year. Fourteen thousand machines a year was then mass production. Think of it! And the biggest implement of production they had in their factory was an 18-inch bench lathe. I saw a photograph of this lathe which was about the size of a cash register. That was the biggest implement of production they had.

Mr. Paterson, no doubt, inaugurated the era of distribution which ran along for a while, and that was the era of the "Hurrah Boys!" that Mr. Mazur spoke of. This era was succeeded a little later when the consumer demand was built up to the point where

the demand pulled the material off the shelves. It was unnecessary to get enthused about distribution because the goods were taken as fast as produced. So all efforts were turned to production, and hence we had the production era—the era of micro-motion study, fatigue studies, Frederick W. Taylor, and all that sort of thing. That went on until it got ahead of the band wagon, and now we have the problem Mr. Mazur so vividly presented, of mass production and mobile demand. The demand is just as mobile as a cavalry shift overnight from East to West, and no one knows where it will be tomorrow. It reminds me of a story concerning the rubberized fabric industry. Ladies used to wear round garters to hold up their stockings, and now they wear them to hold up the traffic. Mass production presupposes a tremendous increase in the cost of things other than labor, and a tremendous decrease in the cost of labor itself. Where men used to make office appliances by hand, today they have presses costing \$50,000, which stamp out the material at an amazing rate of speed. A man runs the machine, one tender for the implement of production. That increases the cost of things other than labor, but it decreases the cost of labor itself.

In the days of the 18-inch bench lathe, when men were making machines by hand, as production increased it was only necessary to add or dismiss workmen in accordance with the changed program. These men, when dismissed, could usually employ themselves in gardens, or farms, or even shoeing horses or making wagon wheels in a blacksmith shop. As mass production is based on the use of elaborate machinery specially designed and tooled for one particular operation and no other, the cost of production has shifted from the payment of the workmen who could be added or dismissed at will to the payment for machinery, which, once employed, remains as an item of cost even when idle. The making of the parts for which the machine is designed must continue or the use of that implement of production will stop. These implements of production are becoming less and less mobile with every advance toward mass production. Demand, as Mr. Mazur has so vividly painted, is tending toward hand-to-mouth buying, frequent and rapid style changes, and other forms of customer appeal. These are all influences which make demand more and more mobile at the very time implements of production are tending rapidly toward immobility.

It very closely resembles the defense system when fortresses

were built of brick and mortar on some promontory as a bulwark of strength and fortification invulnerable from attack. Designed and placed as this fortress had to be, it was effective when fighting at a certain angle from which the enemy was presupposed to approach. When the enemy launched his attack from a railroad battery or movable battleships eighteen or twenty miles away, if the attack was from the angle not expected by the fortress design the expensive fortification would not be effective against a small percentage of the gunnery necessary to capture it from the conventional angle of approach. This is very similar to the eternal struggle between the forces making for *greater* flexibility in demand, or distribution as it has been called, and *less* flexibility in production incident to the employment of methods applicable to mass production.

As the sales era had a turn and was superseded by the production era, so now the production era is being succeeded by an era properly described as "balanced control." Mr. Mazur outlined for you the duties of a super-comptroller who has a very definite part to play for industry in the years to come. It is my humble opinion that the best regulated industries today are now in the midst of this new era of balanced control.

Now what has all this to do with the subject of inventory control? If enterprise is composed of production, demand, and control, then inventory control is the compromising force whereby balance is obtained.

If production is becoming more and more immobile, less and less responsive to changes, less variable with quantity changes in our production output, and demand is becoming more mobile, absolutely fickle, subject to rapid and severe changes, the third thing of control becomes that of a tightrope walker, harassed on the two sides by very quickly moving and forceful factors, and enterprise must steer a course between them. That is inventory control.

Mass production requires continuous production. There isn't a large mass-producing unit in the world that can (I say this advisedly, I say it in the hope that you will agree with me) shut down half-time and pay dividends. That doesn't seem reasonable, and at three-quarter time it hardly seems reasonable. Therefore, you must be very close to the estimated normal capacity in order to pay dividends. That stability can only be obtained by inventory control. I don't mean in any one particular company that just as

soon as sales fall off they have to pile up stock in the warehouse; I mean the control of supply of the particular commodity in the world or the United States or in your particular field or market. Take shoes—Why should shoe production go up and down? You and I always wear shoes as long as we can, until we wear them out. We wear them about the same length of time before buying another pair. The demand for shoes doesn't change anything like the production.

Stability is the object of inventory control—it is to accomplish stabilized production. What is the gain for an individual company from this accomplishment? The gain is this: that as the costs of things other than labor become greater factors in the total cost of units, they cannot be laid off when production ceases. They are less sensitive to reduction when production is reduced. In the formulas, we have a variable and non-variable overhead, and a fixed overhead. There are variable costs which can be dismissed, and non-variable or slowly variable costs with which you have to deal differently. There are the slowly variable costs which you have a hard time reducing, and they never go down quite as far as the variable costs. Then, too, the fixed costs don't go down at all when production falls off. What happens? The unit costs keep going up. If they didn't you wouldn't have the right kind of equipment and machinery for manufacturing your product. As you become better equipped to manufacture your product economically, your cost becomes more and more of the fixed or slowly variable and less of the variable character, which means the ups and downs of the production are going to become more expensive to you. Therefore, the gain to a particular company or to a particular industry in stabilized production through inventory control is that this is not lost during the lulls.

Nor, on the other side, is the excessive cost so pronounced during the peaks. Peaks always cost excessively. Overtime, high-pressure methods, breaking in men, spoilage, and all of those things must be taken into account. There has been suggested a remedy for stabilized production, and I have been at one or two cost meetings where we discussed taking orders at or below normal costs. Now that doesn't seem like as logical a conclusion as inventory control. It would seem that inventory control meant making things at the right time, increasing your inventory at the right time, and decreasing it during the demand period. That seems to be more sensible

than taking orders at or below normal costs. In looking over a cost sheet the other day, over half the unit cost was absolutely unresponsive to stoppage. If they quit making the product that unit cost would go on just the same, over 50% in this case, and it varies with every particular kind of commodity. It was because a lot of the machinery and organization employed in that process was of a highly fixed nature. Therefore, if you discontinued production, you would have the cost with you just the same.

Let us assume that a product costs \$1 to make on an estimated normal production, and, if 50% is unresponsive to stoppage, it can't be stopped in very slack times. Then if we stop making this product, we will stop 50% of the cost and incur 50% of cost. Therefore, we can fairly say that the article will only cost us 50 cents to make. Don't get away with the idea that a cost computed this way is a true cost. The fact is, if you make the article, you will spend 50 cents more than if you don't make it. I wouldn't dare call that a cost, but it is out-of-pocket expense anyhow. At such a time the problem presents itself to enterprise in this manner: 50 cents additional expense over and above the 50 cents fixed charge per unit will produce the unit. If production is discontinued and resumed at a later period, the peak demand will usually involve expanding facilities, organization, and adding the incident increased fixed charges. Each unit of product made by the use of the increased facilities will cost at least the normal \$1 per unit and probably more than \$1. It then appears that an outlay of 50 cents during a slack time will avoid the necessity for expending \$1 during the peaks. If the period is reasonably short it would seem to me a good investment.

You will recall that the financial wizard, Ponzi, offered about 50% in three months. The above computations may even sound more attractive than Ponzi's return, but in actual practice it will undoubtedly return suitable reward where it is intelligently invested in the problem of stabilizing production.

In the analysis of profit trends as presented by Mr. Bullis it appears that the large units are increasing the ratio, whereas the smaller units are showing a decreased ratio. These figures appear contradictory and must be taken with reservations all the way through. Nevertheless, there are sufficient figures in the computation to indicate a very definite trend. It would seem to corroborate the theory that modern production cannot be profitable unless

continuous. There are industries dealing in basic commodities, such as the steel mills where tonnage is the common divisor for all computations, and the automobile shop where the feeder systems and chain production can be accelerated or retarded with the greatest ease. Under these conditions all the contributors to the final output are regulated very effectively by master production programs which enable all the tributary manufacturing departments to adjust readily when changes occur. Part of the success of these large units is due to the fact that the product and organization enables them to operate with "balanced control." Contrast this with an industry manufacturing hardware supplies having thousands and thousands of items distributed to every conceivable industry. There is no common divisor such as tonnage or feeder system. Inventory control with this type of industry does not consist of increasing production from 5,000 to 6,000 or *vice versa*. It is the keeping in balance all the cross-currents of demand and production and reconciling the opposing forces into a major decision.

As an illustration of the value of inventory control it is very impressive to hear Mr. Mazur's comparison of retail methods with manufacturers'. Only recently I had occasion to survey retail methods in connection with inventory control. It is surprising to see how effectively inventories are controlled in such departments as toilet goods where every branded article of perfumery, soap, rouge, etc. is controlled by individual stock records. They know the number of sales last month and other months for seasonable comparisons, together with the balance remaining on hand. These figures are used as a guide for replenishment buying. In the ready-to-wear departments there is an inventory of every garment, style, size and color, and that inventory is recomputed every day. These statistics are furnished regularly to the merchandise control office and used as a governor on the buyers and department managers. It is interesting to compare these inventory control methods with manufacturing industries where it is frequently considered impossible or inadvisable to keep track of little things.

One large store expends roughly \$250,000 a year for like activities. These facts are presented because they forcefully prove the value of inventory control. The advisability of an expenditure is more readily determined in retail merchandising than in manufacturing because competition is ever present and always compar-

able. It is an object lesson to see the methods in use in such large stores as Macy's in New York, Hudson's in Detroit, or Jordan-Marsh in Boston.

This presentation of the subject is based on the statement that a manufacturing business is confronted by the three major problems of demand, production, and inventory control. Demand is a function of the sales department and production is a function of the manufacturing departments. You have heard Mr. Mazur's analysis of the case where the production department estimated a unit cost based on assumed quantity. This unit cost, instead of realizing the profit as anticipated, realized a loss because of additional sales expense.

The third function of management was neglected in the solution of that problem. Practically all industries realize the result of neglecting production costs or sales method. Only the most advanced industries fully realize the profits that can be earned through inventory control. Inventory control, as the third function of management, should include the control of capital investments in plant and equipment, organization expansion, raw and process materials, and all other semi- and completely finished goods. This function of management should assume the responsibility for compromising the arguments advanced in favor of multiplicity of lines marketed and frequency of style changes, as opposed to production arguments presented in favor of standardization, volume production, automatic production methods, and the other factors that make for lower unit cost. Except in the industries dealing with basic products lacking in variety, this function of management will assume such a quantity of details as to involve the supervision of the Super-Comptroller type of department outlined by the previous speaker. Where a company has an extensively diversified line of products, styles, and sizes the control function is undoubtedly more vital than production or demand. In this presentation all technical methods of inventory control as applied to a particular industry have been avoided.

Any questions that may come up can be discussed and I will endeavor to explain any of the points that have not been made clear in the presentation.

CHAIRMAN MONTGOMERY: I think this discussion, Mr. Calhoun, has been very timely. We are going to close the session

this morning exactly on time, so no one need feel solicitous about the time which is passing. For quite a number of years, the National Industrial Conference Board has been a great factor in American industry. It represents all American industries, and it not only represents them in a general way, but it has been a very specific and constructive help in its most difficult problems. We are fortunate in having with us this morning the economist of the National Industrial Conference Board. I take pleasure in introducing Mr. Virgil Jordan, representing the Board.

MR. JORDAN: Mr. Chairman and Gentlemen: I didn't come here this morning with any intention of making a speech, but, since I find myself on the throne with the others, I should like to make specific reference to the particular question that was the subject of this morning's session, that of the profit trend in industry.

I was in very great sympathy with Mr. Mazur, when he said that the important thing from the point of view of industry at large is not what has happened to profits in recent years so much as what is going to happen in the future, and what is going on now. Nevertheless, I feel that the Association has properly recognized the importance of the question that has been raised in the past year or two about the trend of profits in industry, and has done a constructive and timely piece of work in attempting to see what the facts have to say about that trend in recent years.

Everyone knows, as the Association has recognized, that, during the past year or two, there has been a great deal of general talk, a great many of those dangerous generalizations that have been referred to about profit conditions in industry. Many estimates have been offered by one authority or another regarding profit rates and the trend of profit rates. Some of them are referred to in Mr. Bullis' report, not with approval, but by way of showing the diversity of view, the conflict of opinion that prevails on this question.

The question is an important one that deserves as clear an answer as one can give to it on the basis of the available facts. The psychological attitude of the business community in general toward the plans made for the future, toward prospective business programs, is determined a good deal by general ideas of this kind that have been going about in business circles during the past

couple of years. If it is indeed true that there have been at work in industry factors which have made persistently for a downward trend of profits, whatever that may mean precisely, it would be a very serious influence upon future business growth, and, as Mr. Mazur said, that is the important thing for us to consider.

I heartily endorse, also, what Dean Madden said about the dangers that lie in what are called facts and in their interpretation, and would carry that a little further by saying those dangers are perhaps a little more emphasized in the case of what are called statistical facts, which are a great deal more dangerous than just plain facts.

You have probably all heard the story Mr. Shaw of *System* tells about the orator who was discoursing on the salubrious character of the climate of California. He told his audience with great emphasis that California had the lowest death rate of any state—that last year the death rate in California was only 12.9. And while he was letting that impressive statement sink into the audience, someone asked, “What does that mean, 12 point 9?”

“Well, last year for every thousand people, twelve died and nine were on the point of death!”

In this matter of business conditions, particularly with reference to the profitableness, the healthfulness of business, you have the same loose kind of interpretation of statistics. Of course, this problem has been fully recognized in Mr. Bullis’ report in a general way. He has pointed out, in the first place, the lack of any very comprehensive statistics which would afford a clear answer to the question of trend of profits in industry and has particularly pointed out the dangers that lie in the use, in this connection, of bodies of statistical data like those available from the statistics of income.

As you know, probably the most common statement that has been made about profit conditions in American industry in the past year or two is the single statement that two out of five corporations showed no net income in 1925. This is constantly emphasized as the best single indication of how poor business is by and large, or rather how difficult it is by and large to make any money in business.

I should like to point out with reference to that particular statement (and a good many of the other discussions that are based upon the statistics of income) that they, of course, do not

afford anything like a comprehensive picture of profit conditions in business at large.

In 1925, there were some 430,000 corporations reporting according to the income tax requirements. Of these, 177,000, or about 41 per cent, reported no net income, and that is the statement I referred to above. But we commonly ignore such interesting facts about the statistics of income as those that are included elsewhere in the reports of the Treasury Department for some 309,000 partnerships (which are perfectly good businesses also, and some 978,000 sole proprietorships, the net income of which in 1925 was over \$3,500,000,000—which is a fairly sizable amount in comparison with the net income of the corporations reporting net income. Those 978,000 sole proprietorships are, of course, only a part of the individual businesses that exist in the United States, which Dun estimates at over a million and a half. Thus, less than 500,000 corporations are generally used as a basis for judgments about profit conditions in industry, and they are not fairly representative of the probably two million business enterprises of various types that are continually operating in the country as a whole.

There is another interesting thing about these 177,000 corporations that reported no net income in 1925. Those 177,000 corporations paid dividends at the rate of \$1,000,000 a day during 1925, regardless of the fact that they reported no net income, and they daily charged off \$1,500,000 in depreciation. That merely reminds us that these no-profit corporations happen to be, for some reason or other during that year, in a position where, according to the requirements of the income tax returns, they didn't have to report any net income. It doesn't mean that all those corporations are broke by any means.

But this is not to say that competitive business in the United States has been a bed of roses in recent years. In Mr. Bullis' report, the optimistic conclusion that he has reached regarding the trend of profits in the years since 1923 is based upon a series of index numbers representing the net profits of various groups of corporations during that period. It should be clearly realized that so far as any general conclusions are concerned about fundamental trends in American industry, it is extremely difficult, if not dangerous, to do it on the basis of even a five-year period like that, since 1923. The time is too short. It has been a period in which we have had at least two rises and declines in general business

activity. It is a period characterized by conditions of readjustment to a post-war normal of business activity. For all these reasons, it would hardly be safe to base too rigid conclusions upon any trend that is evident during that five-year period.

One important factor that must be taken into consideration in studying the trend of profit in industry has been referred to by one of the questioners from the floor, that of changes in the value of the dollar or in the price level. That factor of price changes, I feel, considerably influences the conclusions which are drawn in Mr. Bullis' report. As you know, there has been a general downward trend in prices since the middle of 1925, so that the last two years of this period covered by this study have constituted a period of declining prices. You see evidences of the effect of a period of declining prices in the statistics that are shown in Mr. Bullis' report. Another interesting fact to be noted there is that the smaller corporations which have shown a decline since 1923 (if you take the period as a whole) have shown a considerable increase in net income since 1925. I mention that in order to indicate merely that a general trend in the price level, composed as it is of different trends in different kinds of prices, may affect groups of corporations very differently. Some of the corporations probably included in one of these other groups happen to be in types of industry not affected by this falling price level. Some may have been in industries which have had increasing prices, as is the case with a few commodities. So, any general conclusion drawn merely from the trend in these five years, that doesn't take into account very carefully the trends of prices in the particular industries which the corporations represent, may be somewhat misleading.

To illustrate the importance of that factor in a larger way, if we attempt to compare the general level of profits in the whole period since 1923 with that in a pre-war period and form a judgment as to whether profit levels today are actually higher than the normal level of prewar days, we cannot very well escape taking into account the tremendous change that has taken place in the price level. When that is done, in connection also with the tremendous increase in production which has taken place through increased efficiency of productive methods, we can form a notion of what should be the normal level of corporate profits, at least in post-war periods, and check with it the actual facts available from the statistics of income as to the net income of corporate

enterprise. There would be clear grounds for expecting an increase in the actual net income of corporations in the period since the war as compared with prewar days, because of the increase in value of the dollar, and because of the actual increased volume of output through improved efficiency in manufacturing industries. That is what might be called a natural or normal increase in the actual volume of profits, but whether the real facts correspond with what might be expected in that respect is another question, and I should like to take the minute or two which remains of my time to point out some interesting facts about that problem.

If we take corporate business as a whole in the United States in the period 1910 to 1913, and compare with it that period of 1923 to 1925, we have in that interval an increase of about 60% in the total volume of production, or physical output, and, besides that, we have an increase of about 70%, roughly measured, in the general price level of commodities and services at large. We should therefore expect that the net profit or net income of corporate business as a whole should have for the post-war period of 1923-1925, an increase of 60% on account of the increase in the volume of production, and 70% besides, because of the higher price levels. As a matter of fact, the actual increase in net earnings of corporations for 1923-1925 has been considerably less than would have been expected on the basis of the increase in volume of production and the increase in prices. The average net income of all corporations in the period 1910-1913 was about \$4,123,000,000. Adding to that the increases of 60% due to the increased volume of physical output and 70% due to the increased price level, we should have a total net income of corporate business (that is, of corporations reporting that income) of about \$11,000,000,000 in the period 1923-1925, whereas the actual net income of corporations reporting during the latter three-year period was only about \$8,500,000,000.

One general indication of the disappointment, you might call it, regarding corporate income as compared with prewar conditions, is that capital has been getting a smaller share of the total increased production of industry, and labor has been getting a greater proportion of it in recent years. We have had, as you know, an increase in the real wages of workers of some 33% during that interval, but whether we have had an increase in the real wage of capital during that period at all comparable with that

33% increase in the real wage of labor is quite another question. I wouldn't attempt to say "yes" or "no," but I should think it would be a little doubtful whether it has actually taken place or not. The general indications not only from that comparison but from other studies that have been made by the Conference Board are that while the total volume, measured in dollars of net income or profits in the industry, have held to a high level, perhaps to a slightly rising level in the years since 1923, the actual rates of profits, whether measured against increased capital or against sales, have not been up to expectations on the basis of prewar comparisons.

I can't attempt in the short time available to give you any of the statistical material upon which that general impression is based, but it accords, curiously enough, with the testimony of experience which is included in Mr. Bullis' report. Although his statistics do not quite support that testimony of actual business experience, as a statistician, when experience does not support statistics, I am inclined always to give the benefit of the doubt to experience rather than to the statistics in the matter. There are clearly indications from the studies the Conference Board has made, at least, that in the past few years there has been such an emphasis upon volume and a tendency towards declining profit margins, that industry feels in various ways the impact of an intensified competition of the new distribution pressure to which Mr. Mazur referred. Coming back to Mr. Bullis' report again, one indication of that tendency is the rather striking fact that, while he found that the larger concerns show increases in total profits at least more emphatically than the smaller ones, it is precisely the larger ones in the Conference Board studies which showed the greatest tendency toward narrower profit margins. That is the result of the larger turnover on the part of the larger concerns, which makes for smaller profit margins, even though the total net earnings show an increase from year to year. The tendency among the larger concerns, the big, large-scale enterprises, working on the mass production principle, to press the volume upon the market so hard and to sacrifice profit margins from year to year, is at the root of the general impression which prevails in industry at large that profits have not been so good in recent years as compared with prewar times.

There is abundant evidence, in business experience if not in

statistics, that competition is increasing in severity, and profits, if as large as they were, are harder to make. It appears, indeed, that we have been for several years in a period of declining rate operation on capital and increasing rate operation on labor, because that former has been relatively abundant and the latter relatively scarce. Whether this situation will continue for a long period is a difficult and serious problem, and I am glad that Mr. Bullis and this Association have made this effort to bring the question so prominently before the public.

CHAIRMAN MONTGOMERY: It has been a great pleasure to hear from Mr. Jordan. I think it has been very helpful to us this morning to have had this discussion and to have heard the different viewpoints of those who have had practical experience with these problems and those who are familiar with the trends of business. Despite some of our disappointment in learning of a declining trend in the percentage of profits, I think we have also had demonstrated to us the hopeful note which the Cost Accountants Association has been able to strike on more than one occasion. I believe we can go away from this meeting with the conviction that, no matter how great the depression may be in a particular industry, in individual enterprises within those industries in almost all cases profits arise from good management. I think that you will be able to go back to your particular enterprises with the feeling that irrespective of the general trend of profits and its continuation, the element of good management in your particular enterprise will enable you to reap the rewards of the application of the principles which are discussed at these meetings.

I think that that is as much of a summing up of this morning's proceedings as you need. You have been able to draw your own conclusions from what you have heard. Helpful and concrete suggestions have been made. It has been a pleasure to me to preside over the session, and I hope that you, too, have had some pleasure and some benefit. Mr. President, I take pleasure in turning back to you the remaining few minutes of the session.

PRESIDENT STEVENSON: Gentlemen, I think you will all join with me in thanking Colonel Montgomery, Mr. Mazur, Mr. Calhoun, and Mr. Jordan for their very able and instructive pres-

entations which they have given us this morning. It is now 12:20 o'clock. We hope to adjourn the meeting promptly on time at 12:30. Is there any comment that any one would like to make from the floor? Is there any thought which any one would like to bring out? Is there any question any one would like to ask Colonel Montgomery, Mr. Jordan, or Mr. Calhoun who are here on the platform? I am sure they will be glad to answer any questions.

MR. CARL J. T. RANNBURY, *Kohler & Campbell Inc., New York City*: My conclusion from this morning's session is that "trend" doesn't mean so much. It is more management, and we can almost forget trend, because it seems that trend is a very complicated thing. Perhaps what should be emphasized more than anything else is good management. That is my conclusion from what I have learned this morning.

PRESIDENT STEVENSON: I think you have summarized the matter correctly. As Colonel Montgomery very aptly said, conditions may exist at certain times in certain industries. We know those conditions do exist. Of course, I personally believe that there are certain basic, fundamental things that can be done and that should be done to make it easier for management to make industry as a whole profitable, but there still remain even in these industries, which are in a basically unsatisfactory condition, the possibilities through better management of making a profit. Even these debased industries can do it. I think Mr. Calhoun, in his talk about the control of inventory hit a very important note. I should like to have seen him throw a little more emphasis on the question of control of production. Of course, the control of production is control of inventory, but the real, fundamental problem which we have all got to face is the fact that most of our industries are overequipped. As Mr. Calhoun said, the mechanical means, which we have provided for taking care of production and which goes on creating cost whether it is operative or not, is making the competitive pressure so severe, notwithstanding capable management, that, in many industries where this pressure for production is so great, it becomes exceedingly difficult to operate even the most well-managed business in those industries at a profit.

I still maintain as I did in Chicago last year, that the funda-

mental answer for American industry is the operation of our business more in terms of industry as a whole and less in terms of individual effort. I still maintain that the future of American industry lies in the development of our trade associations and in giving our trade associations greater freedom of action through proper revision of the laws, the Sherman Law and the Clayton Law, which, at the present time, practically hamstringing their efforts. There is a movement on foot in Washington by the United States Chamber of Commerce to appoint a committee to investigate and study the operation of the Sherman Law and the Clayton Law, and their relation to business. I think that is a very splendid movement, but as I had occasion to write to the Chamber the other day, I think it would be vastly better if this study (and we must have this study made) could be made by a joint commission, authorized by Congress, and that it should have several members of the Senate, members of the House, representatives of the Department of Justice, of the Federal Trade Commission, and selected representatives of business. Those representatives of business might well be chosen by the Chamber of Commerce.

What I would like to see is a study broad enough, big enough, and authoritative enough to consider the interests of the whole country and every one in it and not simply the business interests of the country, and a study which would inevitably carry more weight than one simply made by the Chamber of Commerce.

Gentlemen, I think we may well bring our meeting to a close, feeling that we have had a profitable and interesting session.

**SESSION II**

**THE DETERMINATION OF LABOR  
STANDARDS FOR COST AND WAGE  
INCENTIVE PLANS**

**TUESDAY AFTERNOON, JUNE 12, 1928**

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**This Session Was Organized Under the Direction of  
L. P. ALFORD**

**Vice President of the Ronald Press Company, New York City, and Editor  
of Manufacturing Industries**

WILLIAM L. WALKER, after graduation from college in 1908, served as Assistant Chemist of Government Experiment Station and Instructor in Chemistry and Mathematics. He holds the degree of Master of Business Administration from Harvard. He has spent some nine years in public accounting and management engineering. Since 1922 he has been a Director and Vice-President of the Washburn Company, manufacturers of a wide line of Stamped and Wire Hardware and Kitchenware. He is a member of the American Society of Mechanical Engineers and of the Taylor Society.

W. H. CONN was graduated from Harvard College in 1917, with a year in the Graduate School of Business Administration. He entered the employ of Hood Rubber Company in 1919, where he was associated with the Bedaux engineers in installing the Point System in 1920, becoming Chief Time Study Man in 1922 after their departure. He was Supervisor of Factory Standards in 1925 and Manager of Standards in 1927.

WILLIAM FULLER HOSFORD, after finishing high school, entered the employ of the Western Electric at the Clinton Street Shops, Chicago, as a jack assembler, and has been with the company ever since, serving in many capacities. His growth with the company has been steady and continuous. In September, 1927, Mr. Hosford was appointed comptroller of manufacture, and on the first of January, 1928, was elected a vice-president and director of the company. Mr. Hosford is also a director of Bell Telephone Laboratories. He is a member of the Western Society of Engineers and of the American Society of Mechanical Engineers.

## THE DETERMINATION OF LABOR STANDARDS FOR COST AND WAGE INCENTIVE PLANS

**P**RESIDENT STEVENSON: Ladies and Gentlemen, our second technical session is now open. Our session this afternoon will be devoted to a consideration of the determination of labor standards for costs and wage incentive plans. This session has been organized by L. P. Alford, Vice President of the Ronald Press Company and Editor of *Manufacturing Industries*. As with the speaker this morning, Mr. Alford needs no introduction to our organization or to any one else interested in management problems. His work and personality are well known. I think it was a very splendid thing for us that Mr. Alford was willing to undertake the job of getting this session ready for us.

The session is dealing with a matter that is becoming of consistently increasing importance, both from the point of view of the methods of wage payment, and from the point of view of proper determination of standards for use in connection with our standard costs. It gives me great pleasure to turn the meeting over to Mr. Alford.

**CHAIRMAN ALFORD:** Mr. President, Members of the Association, and Guests: I always think of this association as distinctly a live-wire organization. One reason for that is exemplified in the personalities of our President and Secretary. I invite you to glance at them and then to consider this definition: "a live-wire is one with the insulation rubbed off!"

There is another characteristic of this organization. It seems to be able to get what it goes after, and I suspect the reason is because it knows the habits of those persons and organizations from which it might secure assistance, coöperation, and help.

There was a certain young minister who started to give revival services in a small town, and, as a means of advertising, wanted to put up a group of blackboards on which to announce the sub-

jects of his meetings. He went to the local saloon keeper and asked if he might put a blackboard on the saloon.

The saloon keeper said "Yes." Then he asked, "By the way, where are you holding your meetings?"

The minister replied, "I am holding them in the First Presbyterian Church."

The saloon keeper then inquired, "Where were you going to put the blackboard?"

"I was intending to put it up in front."

"Better not do that," said the saloon keeper, "Put it alongside the back door, that's where the Presbyterians come in!"

This morning we heard a good deal about profits or the absence of profits, and perhaps the picture was a little drab. But there is another side to this as to every story. An investigation conducted by the Sherman Corporation, based on the last year's records of industrial concerns classified into 32 groups, showed these facts which seemingly are significant. Eighty-four per cent of those firms which increased their profit during 1927 reduced manufacturing costs, and 53% of the same number reduced sales expense. This afternoon, we are attacking one of the major items of manufacturing cost, namely, labor. The total labor bill, as you know, for American industry is about \$11,000,000,000 a year. We are to investigate methods of wage payment, and before the afternoon is over, there will be revealed ways in which labor costs have been reduced. Each one of our speakers as he tells his own story will emphasize that point.

Those industries, which have seemed to have made the best record during the period from 1921 on, are those which have had a very high percentage of labor working under some incentive plan. Turning to a few figures, the automobile industry percentage is 83, the clothing industry, 68, manufacturers of rubber goods, 80, shoes, 78, hosiery, 71. Those figures indicate somewhat the extent to which wage payment systems are being applied in many of our major industries.

This topic might be attacked from a number of points of view. The one selected is by a group of three papers, to bring to you the methods for setting time standards: first, by what might be called the historical or more generally applied method of standard times; second, the newer unit time system, sometimes called the

point system; and third, one of the most popular forms as regards the spread of installation, that is group methods.

I invite you also to notice that the experience of firms of different size will be given. The first speaker deals with installations in plants of two or three hundred men, the second speaker for a group of six or eight thousand workers, and the third speaker, a group of twenty-four thousand workers. So, we have a spread of methods of attack, divergence of kinds of products manufactured, and a wide divergence of size.

I now take pleasure in presenting to you the first speaker, who will attack the topic from the point of view of standard times, W. L. Walker, Vice-President of the Washburn Company.

Mr. Walker then presented his paper.

MR. WALKER: Mr. President, Ladies and Gentlemen: This forenoon we heard a discussion which was both philosophical and technical. I want to state at the start that my paper will be neither.

## JOB TIME STANDARDS

W. L. WALKER

Vice-President, The Washburn Company, Worcester, Mass.

THE subject assigned to me is labeled "Job Time Standards." This, I think you will agree, is a broad subject, many phases of which could be used as a subject requiring all the time for study which we could properly devote in a whole meeting of this character.

I shall attempt to confine my remarks to what might be considered some of the more vital points connected therewith, and in order to begin I shall try to define the scope of the discussion for which I have been honored as leader at this time.

1. The definition I would propose would be "the task or standard time in which a job is to be finished by a good operator working under conditions which are maintained with the maximum of uniformity by the management." In other words, it might be called a "yardstick" used to measure the payment of wages for performance within a definite time limit; the wages earned in this case being based upon quantity and quality of work done rather

than upon the time spent in performing the operation. Of course, the amount of money received by an employee must have a very direct relationship to the time spent, as will be discussed later.

When I speak of conditions being maintained with the maximum of uniformity by the management, I do not necessarily mean that the conditions will be the best that the management could possibly devise, for the cost of making conditions as nearly ideal as the imagination would conceive at the time in question and the length of time available to make such necessary changes in arrangements to approach that ideal would often prolong the benefits to be derived from the establishment of "job time standards" too long to be of practical benefit. In most manufacturing plants, public utility organizations, retail establishments, or other businesses, there are usually many things that may be done in a comparatively short time which would enable the experienced Management Engineer to develop the essential control of operations necessary to establish "job time standards." Obviously, such control must be maintained accurately enough to make such standards practical from the standpoint both of the employees and the management, and the improvements which may be made later can be accomplished with such corresponding changes in the task or standards as are agreeable to both parties.

While I do not under any circumstances advocate the adoption of "job time standards" as a measure of efficiency of performance of employees where conditions surrounding the work cannot be controlled by the management, I think at times mistakes have been made by engineers in postponing their adoption too long in an attempt to get conditions too near the ideal to be practical at the time. Oftentimes the expenditures of money and delays thus incurred cause adverse reactions on the part of those controlling the finances to such an extent that further development is interfered with or often stopped. A considerable amount of judgment is essential on the part of the Management Engineer.

2. The idea that employees should be paid according to production in contrast to time spent is not new. Piece-work or job-work on individual jobs or for groups has been tried for many years, with varying results. In the great majority of cases the amounts to be paid under such arrangements have been largely guesswork, and this guess is generally made by the management with an attempt to play safe.

3. In establishing "Job Time Standards," emphasis should be placed upon the importance of standardization and control of conditions so that an operator on any particular job can be assured that he or she will be able to work under similar advantages each day or each time the job is done. Furthermore, the time allowed for the performance of any job should not be the result of guesswork, but the result of careful analysis, which involves the measurement of every detail of the motions which the operator must make in the performance of the job. This type of analysis is usually termed "Time and Motion Study."

For the purposes of such measurement, a stopwatch, preferably with a decimal dial, affords a very satisfactory instrument. Other types of measuring instruments, such as motion picture cameras, which will record certain motions that are not clearly distinguishable by the observer's eye and which may have some advantages in certain work, have been used with success. The experienced time and motion study engineer, however, with the aid of a decimal dial stopwatch that will record the time consumed by the various motions down to a hundredth of a minute, would be able to determine the time necessary for an operator to perform the finely divisible motions which make up the sequence of a completed operation on a job. He will also be able to detect and record important unnecessary motions performed by the operator due to his or her lack of skill or due to conditions over which the operator has little or no control.

I wish to emphasize the importance of Motion Study in determining what is wrong with any particular operation.

I recall an incident where a company spent several thousand dollars in making tools, dies, and improved machinery, which showed a saving of about 25% in labor cost per unit on a particular operation. The management was quite satisfied with the expenditure, and the results obtained would really return good interest on the investment. However, after a Time and Motion Study analysis of the operation was performed in the old way, before the new equipment was installed, it was found that it was practical to reduce the labor cost on this particular operation more than 50% by improving the control of the materials in process and the building of some simple containers in such a manner that the work was delivered to the correct position for the operator, with additional means for semi-automatic disposal of the parts when finished. The

total cost of the changes made, applied directly to this operation, was less than \$100. This might be taken as an example of cost reduction being directed almost entirely toward the mechanical improvement in contrast to elimination of useless motions not readily discernible to the eye, but quickly detected and corrected by the Time and Motion Study Engineer. Reduction in labor cost was more than double that where the improved mechanical equipment was used, with an expenditure of less than 5%.

4. I should like further to make a distinction between job time standards or standard tasks of performance, and wage incentive plans. The two are necessarily closely related, but in the minds of some persons I have found that the wage incentive plans greatly overshadowed the necessity of developing and maintaining standards for the performance of the work before the wage incentive plans were put into operation. In other words, some employers or those responsible for the management of corporations oftentimes either think or like to assume that if the employees are offered some good-sounding wage incentive plan whereby their earnings are to increase with increased production, the employees will find the best way to do the job and the management may be free from the trouble and expense of doing much more. I do not want to discourage the notion that many improvements and shortcuts in doing jobs do come from the employees at work. I personally have received and have seen many very valuable suggestions for the elimination of waste of materials and time from the employees who do the work. However, I do not think the management should ever expect the maximum of suggestions to come from the workers at machines or benches, and, furthermore, such suggestions in many cases, while good for that particular operation, would not fit in properly with the routine or general plan of the business.

The job is up to the management, and should be one of its major activities. Only those in a managerial position, or possibly the better type of trained Management Engineer from the outside, have the facilities to study the individual problems as such and in their relationship to the other functions of the business. Furthermore, they are the ones who have the authority and duty to expend money and make such changes as are necessary to make the improvements suggested. The trained Time and Motion Study Engineer, morally supported by the management, will be able to analyze conditions surrounding individual operations and detect

waste much more quickly and accurately than others in an organization although the latter may have lived with the work day after day. So I wish to state that I do not believe any so-called wage incentive plan will work to the best advantage in an industry unless conditions are first well enough controlled and standardized so that the employees and management are assured that variations from the normal working conditions will be confined within narrow limits.

I have seen instances where wage incentive plans have been adopted where conditions were anything but standardized and controlled and where gains in production and earnings of employees have been obtained. While these gains appeared to be good and the management considered that things were favorably secure, yet, when the operations in the plant were brought under proper control, standards were set, and a new wage incentive plan was adopted, there was much discontent owing to the fact that while the greatly increased production in most cases increased the earnings of employees, the amount received per unit of production was oftentimes much less.

5. Before going on further with the discussion, I should like to mention as briefly as I can what I had in mind in speaking of the development of control or standards in the business before the determination of job time standards and the establishment of a wage incentive plan. I will simply mention the main subdivisions, as follows:

- (a) Physical changes in plant layout involving plant, machinery, equipment, storerooms, etc., so that control may be assured. The experienced Management Engineer or management functioning in that capacity will first make a study of the plant layout as adapted to the products manufactured and to the resources at hand. He will attempt to plan as near the ideal as possible to eliminate as many waste motions as practicable. Then after such study he will want such changes made as are immediately practicable. Often it is possible to make some changes which will yield good returns in rather a short time and then use the ideal plan as a guide for future changes.

- (b) Control of materials is essential. It is impractical to attempt to set job time standards without first obtaining adequate control over materials so that an operator may be assured of having the right materials in the right places before beginning the work. Such control over materials consists of suitable purchasing methods, receiving and storage of materials, continuous inventory control, and the prompt moving of materials to machines and benches between operations. The proper location of materials for the operator to work upon is also very important. Lack of control of materials has been the source of many failures to wage incentive plans.
- (c) Control of the operations in the plant so that decisions may be made in advance of the time when the work is to be done, as to:
  - What will be done.
  - Where it will be done.
  - When it will be done.
  - How it will be done.
  - By whom it will be done.

These functions are generally termed "Planning and Routing," and may be applied with excellent results to manufacturing or other types of business.

- (d) Control over machinery and tools as a proper classification and readily accessible inventories of machinery and tools in the plant and toolrooms, and adequate arrangements for their necessary repairs and maintenance are very essential and closely linked with the control over the operations in the plant.
- (e) Time will not permit a full discussion of the methods used in the control over materials, machinery and tools, and the planning and routing of operations in the plant.

The results of such control and standards are that materials of the right amounts and qualities are on hand in the proper position to be worked upon before the operation is to begin. The

machinery and tools are in order for the operators, or, in case the operator adjusts or makes ready the machine to be used for his job, the tools and equipment, with adequate instructions, are immediately available. The job cards and other records necessary for planning the routing will have been prepared and will be ready when the operations begin. The time will be stamped on the job at the beginning and completion of operations, for payroll, cost, production, and routing control.

The records which are so vital in any system of Managerial Control are prepared by the management, meaning every person in the organization who has any responsibility for the direction of the work of others, and the way is thus prepared for the operator to work according to standardized conditions and methods.

6. I think one might state that there are at least two, sometimes more, stages in the work of the Time and Motion Study Engineer, in the determination of "job time standards." The first may be termed Preliminary Time and Motion Studies, principally motion studies, in order to determine what is wrong with the operation and to obtain facts which may be used to correct such errors and eliminate wastes. Generally, it will be found that where there have not previously been such careful analyses made, waste of time is the result of unnecessary motions which can be corrected at comparatively small expense or possibly no expense at all. Some of the false motions may be the fault of the operator, but I believe the majority will be found to be the result of inadequate management control and standardization of methods. The Preliminary Time and Motion Studies generally show what should be done to improve conditions before "job time standards" could be adopted.

7. When such a standardization of motions has been made that maintenance of the same can be reasonably assured, then the Time and Motion Study Engineer is ready to determine the task or "job time standard." Naturally, each individual job or type of work in a business must be studied, as the motions performed in the multitude of various operations generally cover a wide range of diversification. However, a great deal has been done in classifying motions and establishing standards of time for their performance in individual industries. The cumulative value of information obtained through standards set in an individual industry makes the job not as difficult as it would appear at first sight. Furthermore, it is generally found that the delays caused through lack of

adequate production control or merchandising control usually account for the major delays in each operation, and when this is improved or corrected by the management, it effects a general correction throughout the business.

8. Coming back to the definition which I have previously made of the subject under discussion—the determination of a task or standard time in which a job is to be finished and the establishment of “job time standards” or plan of payment for quantity produced during the given time rather than for time consumed—I think it will be understood by all that such payments may be made for units in hundreds, thousands, or any readily divisible amount. Each unit might refer to pieces, pounds, yards, inches, feet, miles, or any standard of measurement.

The “Job Time Standard” may refer to the number of units to be completed in an hour, day, week, or other measurement of time, or it may refer to the time allowed to finish a given quantity such as a hundred pieces, thousand pieces, or other unit of measurement. Personally, I prefer the latter, as I believe it has some advantages in the tabulating and maintenance of records. I will, for the sake of brevity, refer specifically to the task or “job time standard” determined as the amount of time that the operator is allowed to complete 1,000 units. Clerical work is reduced somewhat by the use of decimal dial clocks where the time is divided into hours and hundredths. Operators find little difficulty in understanding this method.

The Time and Motion Study Engineer must have sufficient training and experience to be able to determine the amount of time allowance which a good operator should have in which to complete a task, working continuously. Definite allowances for rest, and in many cases small unavoidable delays outside the control of the management or the operator, must be made, so that good operators may be expected to accomplish the task or “job time standard” hour after hour, day after day, without injury to health. (This is not intended to be a discussion of the technique of Time and Motion Studies or the allowances for rest that should be made to employees on particular classes of work. Furthermore, time will not permit a discussion of the means whereby the Time and Motion Study Engineer may be able to detect any soldiering or unwillingness to coöperate on the part of operators, although cases of this kind are not as common as one might suppose. Undoubtedly most

of my audience are acquainted with the published works of some experienced men in this field, where many of the details of Time and Motion Study are well explained. Doubtless others have had the practical experience in Time and Motion Study work.)

9. Before adopting a wage incentive plan, it is essential to arrive at a Base Rate of wages for the employees to earn. The base rate of wages to which I refer is the amount of money per unit of time—hour, day, week, etc.—that an employee must earn if he barely accomplishes the task set or reaches the “job time standard.”

The amount of money which an operator should earn within a given time for reaching or exceeding a task or “job time standard” determined should have some relationship to the general standard of wages for that particular kind of work in the community where the business is conducted. If there is to be a wage incentive, as there should be, the operator must be able to earn more per hour or day working according to “job time standards” than he or she could earn on ordinary hourly or daily wages in the community. There have always been different ideas as to how much of the gain should go to the employee and how much to the employer, and I doubt if there is any definite standard that might be applied to all businesses of a class. However, I believe it pays to be rather generous to the employees in this regard. There may be some scientific determination of the amount of money incentive that employees must have above the generally accepted standard of wages for a particular class of work in order to afford the inducement for them to exert themselves to the maximum effort without injury to health. I doubt if our knowledge has advanced to that state at the present time. If it were possible to determine the exact amount of money incentive that would be necessary to induce employees to exert themselves to the maximum efficiency, I think more than that should be offered.

10. Methods of payment according to “Job Time Standards.” Many methods of wage incentive plans or methods of payment have been used. I will mention the following:

- (a) Taylor Differential Piece Rate.
- (b) Gantt Task and Bonus System.
- (c) Variations from the above methods.
- (d) Halsey Premium Plan.
- (e) Rowan Premium Plan.

All these methods, as well as others not mentioned, are based upon the determination of a task or "job time standard" upon which to compute payment.

### **Taylor Differential**

This method was devised by Frederick W. Taylor, who was the father of so-called Scientific Management in Industry. It consists of a high rate per unit of production for reaching or exceeding the task or standard set, and a low rate per unit of production if the task is not reached. This method has perhaps the strongest incentive to high production, and Mr. Taylor, his associates, and those who follow him, have obtained remarkable results from this method. Needless to state, however, that the most careful analysis of conditions and development of adequate control over all operations must precede the establishment of the Taylor Differential Piece Rate System.

At the present time I think there is an objection to this system as developed by Mr. Taylor due to changes in industrial conditions. The differential between the high and low rate was 40% which exacted a very severe penalty for not reaching a task. I have used differential piece rates in some plants with a spread of 20% between the high and low rate, and this method has been maintained with success where developed. However, I think it might be very difficult to establish this plan in the average plant today where it has not been in use previously.

### **Gantt Task and Bonus**

The Gantt Task and Bonus system is based upon paying the employee a guaranteed rate per hour for production if less than the task or job time standard set. For production exceeding the task set, the earnings equal the credited hours at the hourly rate, plus a bonus of 30% on time saved. This method affords an advantage to beginners, as they are sure of receiving a guaranteed rate per hour while they are becoming sufficiently skilled to reach the task. It has been used with considerable success.

As stated above, we have used the Differential Piece Rate method with considerable success for a number of years. In order to get around the severe penalty of the low rate, and still maintain most of the incentive, and the simplicity of the Differential Piece Rates, we have developed a modification of the method which pays

a guaranteed rate per hour for performance below the established "job time standard," with a high rate per unit of production for performance equal to or exceeding the standard. The high rate in this case corresponds to the High Rate in the Differential Piece Rate. Under this plan the operators are automatically placed upon a piece-work basis when the task is reached.

This plan has the following points in its favor:

- (a) It affords all the incentive present in the Gantt Bonus Plan, and to a very large degree that of the Differential Piece Plan, without the extreme penalty existing in the latter.
- (b) It is easily understood by the operator.
- (c) It offers the necessary stimulus to beginners, without too much penalty.
- (d) It is comparatively easy to maintain as it requires the minimum of clerical work.

11. The Time and Motion Study Engineer has two main problems on his hands aside from the analytical studies he must make to find out what improvements should be made before establishing "job time standards." He must not be content at solving these problems once but must be ready to do it over and over again. These are:

- (a) First sell the idea to the management, all the way down from the General Manager to the Foremen. This is in many cases his most difficult job and the higher up the line in authority he goes the harder it is to sell. This is due to several reasons, some of which might be classed as follows:

The management sometimes thinks that increased production on the part of employees, through the development of plans they have not thought of, is a reflection of discredit upon themselves. The management sometimes wants all the gains, and becomes jealous or uneasy when the employees make more than the accustomed hourly wages.

The management often wants the gains in production but will not take the time and give enough thought to the maintenance of the standards necessary for efficient production.

And sometimes the management does not like to inform the employees that rates will not be reduced unless the operation is changed or unless general standards of wages throughout the country are reduced.

- (b) The second task for the Time and Motion Study man is to sell the idea to the employees. This is generally not a difficult task. Employees, in most cases, are glad to work under standard conditions where they get paid for quantity produced, with proper wage incentives for high performance. The employees want, and have the right to expect, a fair distribution of the gains through decreased costs, and the assurance that individually they will not be discriminated against for exceptionally good performance. In other words, if the attitude of the management is one of fairness, and the "job time standards" are determined by a competent Time and Motion Study Engineer, after adequate analyses of the facts, there need not be much fear for the success of a reasonable and not too complicated wage incentive plan. The employees are just as eager to make money as the management and the stockholders and in most cases need it more.

12. The following gives the relationship of Established Standards to costs. Some of the important functions of a cost system are:

- (a) To determine what goods or services have cost, after the completion of the work involved in producing the goods or performing the service. This provides the essential information for the management to determine actual costs of individual items or groups, with comparisons with previous performance or estimates, and provides the figures for the Accounting Department in determining Profit and Loss. The tabulation of costs after a job is done is always history. It is good history if properly done and should be very useful to the management.
- (b) Estimate in advance to a fine degree of accuracy, what the goods to be produced, or services to be performed, will cost.

The three factors of costs are: Materials, Labor, and Indirect Expense.

With proper inventory control the material costs may be estimated to a fine degree of accuracy in advance. Emphasis should be placed upon the control, as I have seen many instances where material costs were estimated which were very inaccurate as there was no record of, nor adequate control over, spoilage.

In one well-known industry a few years ago the management had a department which was operated at considerable expense where costs were supposed to be computed. After a comparatively brief investigation it was evident that the distribution of Indirect or Overhead expenses had little relationship to the real conditions. The labor was largely piece-work, and where day-work was not paid, which was often done for various reasons, the piece-work price would be taken for labor costs. Of course, it was assumed that the material costs, which represented from 65% to 90% of the total costs, were figured accurately. The so-called Cost Department had taken the patterns and computed the amounts of materials that should be used, allowing for the necessary waste. The workmen who performed the first operation were next to the so-called storeroom where the materials were stored, with not even a fence between. After a short investigation, it was found that a great deal of material was spoiled and the deficiency made up by getting more from the shelves, which practice was not apparent to the so-called Cost Department. So the figures, through lack of control, in many instances were worse than none at all, as they were misleading to the management.

This case, which could be multiplied over and over, by similar cases in different industries, should, and I feel certain does, emphasize, in the minds of cost accountants, the necessity of control of all factors of cost.

Where proper inventory control exists, the estimates of material costs may be made very accurately.

- (c) With "job time standards" and wage incentives for operators, especially where the method of payment is made in units of production, the estimated labor cost of production or services may be made with a fine degree of accuracy in advance.

The indirect, or overhead expenses, may also be determined, as the same records which control the labor costs also show the time which the machinery, tools, or equipment are used for the various operations. This time multiplied by the machine hour cost, or relative cost numbers, gives the amount to be charged for any particular operations so that it will bear its proper proportion of the Indirect or Overhead Expenses.

13. Budget of Performance. I believe it is generally agreed that a Budget of Expenses and Expenditures is very essential to the successful management of a business. With "job time standards" developed, the management has a budget of performance, and is thus able to predetermine the Budget of Volume of Production as well as Costs.

14. Results of the use of "Job Time Standards." Naturally, the value of any system of Wage Payment and incentives depends upon the results obtained. It is practically impossible to determine just how much of the gains can be attributed to the wage incentives, as such, as these are dependent upon adequate managerial control and standardization of methods. However, it may be said with surety, that a considerable percentage of the gains is due to the incentive for increased wages which the employees receive.

Gains of 100% to 200% in production per unit of time are not uncommon when "job time standards" are properly developed and maintained. I have seen gains as high as 1050% over past performance.

15. The actual costs of the operations of an industry are essential to maintain Accounting Control which will reflect the financial results of the operations. They are also used to check the estimated or budgeted costs which are computed before the work is done.

However, I believe that Estimated or Budgeted Costs, which can be made to a fine degree of accuracy, when "job time standards" and the essential managerial control necessary for the establishment and maintenance of the same have been developed, are far more valuable to the management and will be used more than the history of actual costs.

16. In conclusion I would state that I believe the development of "job time standards" or tasks for performance in a business, when properly done will increase production, often to a very considerable degree, and will provide an increase in the earnings of the employees to a substantial degree, and still reduce the costs of

goods produced or services performed. In making this statement I want to repeat the emphasis I have placed upon the necessity of the development and maintenance of adequate managerial control previous to the establishment of job time standards and the associated wage incentive plans.

One of the speakers this forenoon, in referring to certain things that had been talked of a great deal in years gone by, said that many of them had gone by the board, and among them he included micromotion studies. I don't believe the micromotion or time study has gone by the board. I still believe it is in its infancy. It is simply a method of measuring to determine standards and determine that balance which the speaker referred to as necessary in industry. I think it is a very essential part of the job in determining and establishing that balance.

Some things are done in business as well as in anything else with the best of intentions, but sometimes they don't turn out quite as well as they were intended at the start.

A banker in a certain city was driving a speeding car down the street and ran into a tramp. The tramp was knocked over into the gutter and received a very deep gash on his face. He was bleeding profusely, and the banker, being a kindly hearted man, picked him up and rushed him to the hospital. When they reached the hospital, the surgeon looked the tramp over, took his pulse, measured his blood, and decided that a blood transfusion was necessary. The banker was a little perplexed as he stood there. He had caused the accident and, as I said, being a rather kindly individual, agreed to submit to a blood transfusion. This was done. A little later it was noticed that the victim's pulse was getting weaker, and two hours later it was found that the tramp had frozen to death.

I have three charts here which show some elementary cases that might be interesting to some who might not have seen them. I will show them before concluding. The first chart I have here is just a brief outline of a time motion-study sheet which I referred to in the determination of preliminary time studies and the establishment of standards.

The second chart I have to show here is a simplified instruction card, which is used to give to the operator in order to insure that conditions are as they were set.

I have here a computation of earnings according to two or three plans. The first is the Taylor Differential Piece Rate, Job



## STANDARDS FOR COST AND WAGE INCENTIVE PLANS 59

## INSTRUCTION CARD FOR OPERATION

DRAWING NO. OPERATION SYMBOL **KW10BR4**

SAMPLE NO **KW10BR** MATERIAL SHEET NO.   
 NO SHEETS

OPERATION SYMBOL **KW10BR4**

SHEET NO.   
 NO SHEETS

POWER TOOLS WHICH MAY BE USED			TOOLS AND JIGS TO BE USED			OTHER EQUIPMENT		
NO. USED	SYMBOL AND DESCRIPTION	REV. BY / DATE	NO. USED	SYMBOL AND DESCRIPTION	LOCATION IN TOOL ROOM	NO. USED	SYMBOL AND DESCRIPTION	
1	POWER PRESS	70	2	TS3CKW - DIES	F5B2	1	BOX-PARTS - ELEVATED	
	SINGLE ACTION		1	TC2 DKN - TOP HOLDER	D2D3	1	BOX FOR FINISHED	
	DK II		1	TC4 DKN - BOTTOM HOLDER	D2D4			
			1	TM16KW - GAUGE	A4C3			

NO. OF OPERATION	DESCRIPTION OF OPERATION	TIME FOR ENTIRE LOT	ELEMENT (BURN-IN) TIME PER PIECE
<b>TRIM ENDS AND FORM</b>			
1	GO TO TOOL ROOM GET DIES, GAUGE & HOLDERS AS ABOVE	4.00	
2	PUT BOTTOM DIE HOLDER ON PRESS	.35	
3	PUT (2) LARGE SCREWS IN PLATE (LOSSE)	1.00	
4	PUT BOTTOM DIE AND PLACING IN	1.07	
5	ADJUST (6) SCREWS - (NOT TOO TIGHT)	1.13	
6	PUT TOP DIE IN HOLDER (NOT TIGHT)	.40	
7	ADJUST (2) SCREWS - (NOT TIGHT)	1.50	
8	PUT TOP DIE & HOLDER INTO MACHINE, DRIVING IN WEDGE TO HOLD	1.28	
9	LOWER PUNCH BY HAND AND ADJUST KNIVES	6.95	
10	ATTACH GAUGE TO BOTTOM DIE	1.07	
11	TIGHTEN ALL SCREWS	2.27	
12	TEST - MAKING (5) PIECES	1.63	
13	MAKE SLIGHT ADJUSTMENTS AND HAVE PIECE APPROVED	1.10	
14	PLACE QUANTITY OF PARTS IN POSITION AT PRESS	18.75	
15	PLACE ON DIE TO GAUGE		.015
16	OPERATE PRESS		.030
17	REMOVE PART AND SCRAP		.010
18	FILE ON BRUSH		.020
19	PACK IN BOX, PAPER BETWEEN		.016
20			.020
<b>G. GRAND TOTALS</b>		<b>LOT SIZE 10,000</b>	<b>TOTAL OPERATING TIME</b>
ADD	40 % TO HANDLING TIME =	1.03	+ .041 = 1.144
ADD	2.5 % TO MACHINE TIME =	1.00	+ .003 = 1.013
TIME BASIS FOR OPERATION PER 1000 PIECES (A)		2.60 Hours	
TIME ALLOWED FOR WHOLE ORDER = NO. PIECES X (A)			
		1000	

SKETCHES AND REMARKS

RATE SET FOR WORKMAN

MONTH	DAY	YEAR
4	15	25
SIGNED <span style="float: right;">R. B.</span>		
CHECKED <span style="float: right;">T. P.</span>		

WHEN WORK CANNOT BE DONE AS INSTRUCTED ON THIS SHEET - THE INSTRUCTOR (SHOP FOREMAN) MUST REPORT TO PLANNING DEPT. AT ONCE.

## CHART 2

**Time Standard.** (Task) 1,000 pieces in 2 hours. Base rate, 50 cents per hour. High rate per 1,000 pieces, \$1. Low rate per 1,000 pieces, 80 cents. "A" production, 1,000 pieces, 1.60 hours. Earnings, \$1, or 62½ cents per hour.

### COMPUTATION OF EARNINGS

#### TAYLOR DIFFERENTIAL PIECE RATE

JOB TIME STANDARD (TASK)      1000 Pcs. IN 2.00 HRS.  
 BASE RATE      50¢ PER HR

HIGH RATE PER 1000 Pcs.      \$1.00

LOW RATE PER 1000 Pcs.      \$ .80

(A) PRODUCTION 1000 Pcs.      1.60 HRS.  
 EARNINGS      \$1.00 OR 62½¢ PER HR.

(B) PRODUCTION 1000 Pcs. IN 2.20 HRS.  
 EARNINGS      80¢ OR 36.4¢ PER HR.

#### GANTT TASK AND BONUS

HOURLY RATE      50¢

(A) PRODUCTION      1000 Pcs. IN 1.60 HRS.  
 EARNINGS       $1.60 \times 50¢ = 80¢ + 30\% = \$1.04$   
                          OR 65¢ PER HR.

(B) PRODUCTION LESS THAN 1000 Pcs. IN 2.00 HRS.  
 OPERATOR RECEIVES GUARANTEED RATE OF  
 50¢ PER HR.

CHART 3

“B,” production, 1,000 pieces in 2.20 hours, earnings 80 cents or 36.4 cents per hour.

Gantt Task and Bonus; hourly rate, 50 cents. “A” production 1,000 pieces in 1.60 hours. Earnings, 1.60 by 50 cents, 80 cents and 30% equals \$1.04, or .65 per hour.

“B,” production less than 1,000 pieces in 2 hours, operator receives guaranteed rate of 50 cents per hour.

Computation according to plan using guarantee rate plan and high piece rate: Guaranteed rate per hour, 40 cents. Base rate, 50 cents. Job Time Standard (Task) 1,000 pieces in 2 hours. High rate, \$1 for 1,000 pieces.

“A,” production, 1,000 pieces in 1.60 hours. Earnings, \$1 or 62½ cents per hour.

COMPUTATION ACCORDING TO PLAN USING  
GUARANTEE RATE PLAN AND HIGH PIECE RATE

GUARANTEED RATE PER HR. 40¢  
 BASE RATE 50¢  
 JOB TIME STANDARD (TASK) 1000 Pcs. in 2.00 Hrs.  
 HIGH RATE \$1.00 FOR 1000 Pcs.

(A) PRODUCTION 1000 Pcs. IN 1.60 HRS.  
 EARNINGS \$1.00 OR 62½¢ PER HR.

(B) PRODUCTION 1000 Pcs. IN 2.20 HRS.  
 EARNINGS 88¢ OR 40¢ PER HR.

(A) LABOR COST PER 1000 Pcs.	\$1.00
INDIRECT EXPENSE (WITH MACHINE HR COST AT 60¢ PER HR.)	.96
TOTAL	\$1.96

(B) LABOR COST PER 1000 Pcs.	\$.88
INDIRECT EXPENSE	1.32
TOTAL	\$2.20

CHART 3—Continued

“B,” production, 1,000 pieces in 2.20 hours, earnings, 88 cents or 40 cents per hour.

“A,” Labor Cost per 1,000 pieces, \$1. Indirect Expense (with machine hour cost at 60 cents per hour), 96 cents, making a total of \$1.96.

“B,” Labor Cost per 1,000 pieces, 88 cents, Indirect Expense, \$1.32, making a total of \$2.20.

That indicates that, although the guaranteed rate is lower than average, the cost per unit, of course, is much higher.

I thank you.

CHAIRMAN ALFORD: We are indebted indeed, to Mr. Walker for his paper, and particularly for the force and clarity

with which he has emphasized the necessity of establishing proper standards as the basis of any wage payment plan. Incidentally, I can say for him that he has had a remarkable success in his own concern. During a period of three or four years, when he has been in charge of manufacturing, he has increased the output per employee of all of his plants at least 100%, and, in one case, by 200%. He offered a bit of challenge to this audience when he said he knew of one case where improvement had been in the proportion of 1050%. Perhaps in the time for discussion, some one may be able to beat that record.

We now turn to the second paper of the afternoon, a paper dealing with the setting of standards for a method of wage payment, which is not very well known. There are some instances of this kind which are successful, but, by and large, this method has not had as much discussion and publicity as other methods. I take pleasure in presenting to you Warren H. Conn, who will present a paper entitled "Unit Time Standards," sometimes called the point system. Warren H. Conn, Director of Standards, Hood Rubber Company.

Mr. Conn then presented his paper.

## UNIT-TIME STANDARDS AS EXEMPLIFIED BY THE POINT SYSTEM OF INDUSTRIAL MEASUREMENT

W. H. CONN

Director of Standards, Hood Rubber Company, Watertown, Mass.

UNIT-TIME STANDARDS may be expressed in various terms and may be set up and controlled by various methods. Since our experience at the Hood Rubber Company in this matter has been entirely with the Point System, the following comments on the unit-time standard idea will be based on the point and the system developed for its various uses.

The Point System has been introduced into industry by its originator in response to the need which has been felt for a system of measurement of the value of the human effort.

The point is a unit of measure by which human energy in industry may be gauged, by which the industrial effort of every human being, whether laborer or supervisor, whether working

individually or in groups, may be resolved to one common basis. It makes no difference along what lines, at what phase of human power expression, at what type of productive activity human beings may apply themselves; the point provides a common denominator to which all human effort may be reduced.

Industrial effort is surrounded by two constants. Man is a force, and as such is potentially a constant. While the productive capacity of individuals may differ, the average of a large group is the same now as it ever was; any variations being due to differences in facilities. Time is, of course, also a constant.

But effort alone is not the sole factor to be considered in establishing a unit of industrial measurement. Although human energy is inexhaustible, its conductor, man, is not. As this force is spent in the performance of work, inevitable strain and resulting fatigue occur in the medium. Provision must be made for relieving this strain, compensating for this fatigue, and giving the instrument opportunity to reconstitute itself. Thus rest is a factor to be considered.

Many studies were made in an endeavor to determine the relation between strain and the various degrees of energy expended for each type of motion in the performance of a job, so that ratios thus ascertained could be uniformly applied to all work done by man. Subsequently, a curve was built up showing the amount of rest that is necessary to offset working times of varied length and intensity.

The results of these experiments were set forth in the following doctrine:

Rapidity of motion being inversely proportional to weight handled, pressure applied, and length of cycle, the ratio of strain for a muscular effort of a given power is directly proportional to the rapidity of motion, and the duration of work and rest periods is thus inversely proportional to the rapidity of motion.

There are also conditions and occurrences beyond man's control which prevent a steady application of effort to the job. Provision must be made for such unavoidable delays, another factor to be considered.

Work, therefore, is made up of three elements—effort, rest, and unavoidable delay—and may be measured by the point which has been defined as “a fraction of a minute of effort, plus a fraction

of a minute of rest and delay, the aggregate of which is always one minute, but the proportions of which vary according to the nature of the operations." Thus a point, briefly, is the reasonable amount of work expected in one minute's time.

While a minute is an inflexible measure of time, a point, measuring a minute's worth of work, may be accomplished in more or less than one actual minute. It, therefore, becomes possible to produce, let us say, 80 minutes' worth of work in an hour, or 80 points in an hour, or to make an 80-point hour. Furthermore, the point, representing the value of one minute, can be used for measuring other than regular productive accomplishment. A point can be given for each minute of idle time, breakdown, day-work, supervision, or upkeep. At the end of the day an operator can have both production points and allowed points. In fact, one of the fundamental precepts of the Point System is that the worker is guaranteed a point of some sort for every minute he is in the plant from the time he checks in until the time he checks out.

Thus the point is both a measure of human effort and a measure of time. Since the human effort element is modified by the rest and delay factor, the point becomes for all practical purposes a unit of time.

A standard is the number of points allowed for the performance of an operation. Just as a point is the reasonable amount of work expected in one minute's time, so a standard of 10 points, for instance, is the reasonable amount of work to be performed in 10 minutes' time. Sixty points is the reasonable result expected from an hour's work. An operator, who by application and superior use of his capabilities produces 80 points in an hour has exceeded required production and is credited with 20 premium points.

Standards are set from time studies which are taken according to the regularly accepted code of good time study practice. When installed by outside engineers it is doubtless wise to give due regard to the psychologically sound assumption that the factory personnel resents advice from an outsider on how to do jobs it has done for years, and therefore objects to taking studies and setting standards however the operations are being done. But when the Point System is functioning under factory control, it is obvious that time studies for setting up standards of performance must be predicated upon the knowledge that the job has been analyzed and lined up on the best method, that the movements of the operator

have been studied and corrected to insure least waste motion, and that the material supplied and the tools and equipment used are in accordance with established specifications.

The operation is divided into its component elements, enough readings taken on each element for the observer to satisfy himself that he has obtained a consistent picture of the worker's performance, average times computed for each element, these elemental averages resolved to a common production unit average if necessary, and the result is the average time it took the operator to perform the job while being studied.

Any time study must be rated according to the performance of the operator, in order that the results obtained from studying his work may be compared with the results of observations of other operators and the standard performance to be set up. Under the Point System this rating is very easily expressed by the hourly point accomplishment the observer judges the operator to have attained during the study. If the performance is judged to have been reasonable, the operator is rated as a 60-point operator. As the performance was judged to have exceeded the requirements of reasonable effort, the operator is rated as a 70-, or 80-, or 90-point operator.

Figuration of the standard thus becomes simply the solution of the following equation:

$$\begin{array}{lcl} \text{Seconds per operation} & = & \text{Points per operation (standard)} \\ \text{Seconds per hour} & = & \text{Points per hour (rating)} \end{array}$$

The actual in seconds multiplied by the point rating and divided by 3,600 gives the point standard. But the standard thus ascertained represents the accomplishments possible through effort alone. Since rest and delay must be coupled with effort, this standard must be increased by the percentage of rest and delay allowable according to the nature of the operation, before the correct job standard can be set. In practice, the rest and delay allowance is added to the effort rating; the standard then computed is the complete point value of the operation.

Standards must be set with particular care, since they represent the time allowed to do the job—and time, being a constant, is not subject to change. Hence another fundamental precept of the Point System is that standards are guaranteed and cannot be changed as long as the operation and conditions surrounding it remain un-

changed. The standard is the definite point value placed upon the completion of a definite operation upon a definite article in a definite manner. It is a fixture. The worker can increase his production as much as his own powers permit without fear of any arbitrary decrease in standard.

Checking the operators' work under the Point System requires three records. The clock sheet shows the time in and time out so that the total hours in the shop may be computed. The work sheet shows the operations performed, the number of units, and the standards. The allowed time sheet shows all time spent by the operator on other than standard work. As many allowed time classifications may be used as are deemed necessary to give the desired information of how non-standard time is spent. Time on and time off are recorded with the elapsed time in minutes extended under the proper classification. Day-workers and all indirect workers are also carried on this sheet. Thus from these three sheets a complete report of everybody from the superintendent to the newest apprentice is obtained.

Multiplication of the units by the standards gives the standard points earned. To these are added the allowed points, giving the total points credited to the operator for the day. Dividing the total points by the hours worked gives the point hour by which the operator is comparatively ranked with his fellow workers and his own performances on other days. Multiplication of the hours worked by 60 gives the base points which the worker is guaranteed; these subtracted from the total points give the premium points, for which an extra reward is given.

This mention of the word "reward" is the first instance in which any reference has been made to monetary values or money wages under the Point System, in order that it may be clearly understood that the point is a thing in itself—a unit of measure based on time with absolutely no regard for what that time may be worth in money. A point and what is paid for a point have nothing to do with each other. A standard of 60 points means that the job can reasonably be performed in an hour. Whether the operator is given 50 cents or \$5 for that hour's work has nothing to do with the fact that that job is and always will be worth 60 points.

Under the Point System every operator receives a base rate expressed in terms of cents per hour. This base rate depends on

various factors, to a large extent on the going day rate for that particular job in that district. It will rise or fall as there are more or less people who are willing to work at that job or at any job. It will be graduated according to the skill required, the responsibility involved, the length of the learning period, the job's agreeable or disagreeable features, the risks to life and limb and health. These factors, of course, make a guarantee of base rates against change unnecessary. By its very nature a base rate must be consistent with the rates paid for work requiring greater or less skill etc. in the same department or in other departments of the factory or in other factories. Establishment of the base rate therefore is a matter for the factory management, not a function of the time study section.

As already noted in another manner, payment of the base rate for every hour worked is guaranteed the operator no matter what his production may have been. The value of a point is found by dividing the base rate by 60. For all base points full point value is paid. For all premium points the operator receives  $\frac{3}{4}$ -point value. Thus the operator's weekly pay consists of two amounts—his base wage, which is the hours worked times the base rate, and his premium, which is the premium points times the premium point rate. This separation is carried right through to the method of paying off—the worker receiving each week a white envelope with his base wage and a pink envelope with his premium. The good psychology of this double envelope idea is apparent. The operator considers his white envelope as the wage he is entitled to anyhow, and concentrates on increasing the amount in his pink envelope which is the reward for the extra effort he has put in. It may also be noted that in many instances the pink envelope is not turned over to friend wife.

A posting sheet is prepared daily for each department showing for every standard operator the hours worked, the total points credited, the point hour and the premium earned. This sheet is prominently exhibited in the room and every worker can compare himself with his fellows. The competition which the posting sheet engenders is remarkable. It is natural to have a just pride in one's achievements and when a visual record is provided the urge for superior attainment is much more decided. Furthermore, since all point hours below 60 are entered in red ink, the posting sheet serves as a powerful incentive to keep operators from going or

staying below standard production. A worker quickly realizes that he has no standing with his fellow workers if he is "in red."

This plan of wage payment also affords simple solution of two frequently rather awkward matters. Penalties or scrap deductions can be easily and accurately made. At any stage of manufacture an article represents so many points. This amount can be used as the basis for setting up penalty standards. Scrap points are deducted from premium points. Beginners are easily identified and can be readily watched and promoted as their progress, as indicated by their point hour, warrants. A beginner's base-point hour is figured in the same ratio to 60-point hour as his hourly rate is to the regular hourly rate of the job. For instance, an apprentice hired at 30 cents per hour on a job with a base rate of 45 cents per hour would be on a 40-point base. A schedule is set up whereby the beginner, having attained a 45-point hour for a week is raised to  $33\frac{3}{4}$  cents per hour, a 50-point hour to  $37\frac{1}{2}$  cents per hour, etc. Meanwhile he is paid premium whenever he exceeds his base. Thus the beginner knows just how he can increase his weekly wage. There can be no argument. As soon as his point hour shows an increase is merited, it becomes automatically effective. It will also be noted that the point value remains a constant, thus involving no variation in costs.

One of the outstanding features of the Point System is the opportunity it gives to measure and reward the efficiency of the indirect workers. There is no reason why foreman, inspectors, truckers, supply clerks and machinists should not be ranked and given premium as their efforts merit. All operators, not on direct standard, who, by their efficiency can contribute to the efficiency of the standard workers, are entitled to share in the results as shown by the premium points earned by those on standard. The extent to which each shares is determined by the degree to which his work affects the standard workers. The amount of premium depends upon his premium points and his base wage or salary.

Statistics for computing this indirect premium are gathered from the posting sheet, the allowed time sheets, and the payroll sheet and entered each week on a control sheet known as the point analysis sheet, which is laid out to show figures for thirteen weeks. Each quarter of the year is divided into three periods—two four-week periods and a five-week period. Indirect premium is paid once each period.

The analysis sheet shows:

1. The number of operators, direct and indirect.
2. The number of operators below standard, or "in red" for the week.
3. The total hours, direct, indirect and standard.
4. The total direct points and subdivisions showing standard points, day-work points, experimental points, assignment allowance points, guarantee points, and all other excess direct allowance points as may have been provided for by the allowed time classification.
5. The total indirect points and subdivisions showing points paid for supervision, clerkship, inspection, handling, etc., as classified on the allowed time sheet.
6. The equal standard points or those points given to operators as base points for which no production was received.
7. The total direct payroll and subdivisions showing the amount paid for each of the direct point accounts.
8. The total indirect payroll and subdivisions showing the amount paid for each of the indirect point accounts.
9. The amount paid for equal standard points, split between that chargeable to training apprentices and that chargeable to supervision for failure to bring beginners along according to schedule or allowing 60-point operators to slip back "into red." (This split charge on beginners is arrived at by setting up a progress schedule for every operation showing the point hours experience has indicated can be attained each week of the training period. If an apprentice makes the schedule each week no charge is made against the foreman, any equal standard points due to difference between point hour attained and base-rate point hour being considered a normal training expense. If an apprentice fails to make the schedule, the cost of the equal standard points occasioned by the difference between his actual point hour and the scheduled point hour is charged against supervision.)
10. The total controllable labor, or the labor costs which the foreman has it in his power to control. This would include all indirect costs, the excess direct costs of idle time, breakdown, reoperation etc., and the equal standard cost as mentioned above.

From these figures are computed :

1. The operator's point hour, which is the standard points divided by the standard hours.
2. The departmental point hour, which is the standard points plus all allowances at 60 not charged against supervision divided by the total direct hours; (thus all points paid for idle time, breakdown, reoperation, etc. are a total loss to supervision.)
3. A point hour adjustment for beginners, which is the difference between 60 and the average base-point hour of all standard operators; beginners being figured at their scheduled point hour.
4. The premium point basis, which is the departmental point hour plus the point hour adjustment minus 60.
5. The standard cost per point, which is the cost of standard labor divided by the standard points.
6. The indirect cost per point, which is the total indirect payroll divided by the standard points.
7. The controllable cost per point, which is the total controllable labor cost divided by the standard point.

A standard controllable cost per point is set up for each factory section. Time studies are taken and ratings made on all indirect operators, from which ratios are determined between each kind of indirect labor and the standard points available. By dividing this factor, increased to a weekly basis, into the weekly rate for that class of indirect labor, a standard cost per point for each type and a total indirect standard cost per point are obtained. Allowances for unpreventable excess direct labor may be included if desirable. The resulting total is the standard controllable cost per point.

The cost efficiency is then figured by dividing the standard controllable cost per point by the actual controllable cost per point. This efficiency percentage is applied to the premium point basis and the resulting figure is the supervision premium points earned for the week. For aid in quickly noting cost conditions, the percentage of day-work, allowance, equal standard, indirect, and total costs to standard cost is also shown.

The analysis sheet is sent to each foreman as soon as possible after the week's figures have been assembled and computed. By referring to the supervision point hour shown and then tracing

variations back through the cost percentages to the totals used and thence to the posting sheet and daily allowed time sheets, a foreman can find out exactly what occasioned the conditions indicated and can take steps to encourage or prevent their recurrence.

The premium point value for indirect workers is one-sixtieth of the weekly salary. Multiplying this value by the premium points earned in the period gives the premium amount. For ease in computation the premium is usually figured as the same percentage of the wages paid for the period as the average weekly premium points is of 60. As in the case of standard operators, in paying-off, premium is given out separately.

Too frequently the Point System is regarded solely as a means of wage payment. Such is doubtless its primary intent. However, it should be borne in mind that the point, being a unit of measure, can be used in several other fields where a common expression of labor measure is of value.

Production schedules can be accurately set up and easily controlled. By means of the standards, all goods to be produced, of whatever kind or variety, are converted into points. By using point hours as a gauge, the number of operators or machines, the number of man-hours or machine-hours necessary to get out the assigned production is known. By means of this comparable medium, supervision can ascertain the amount of work to be done and the amount of labor and equipment necessary to do it. Inversely, by being in possession of the knowledge of the productive capacity of his operators, a foreman is in a position to know how much production he can handle.

Planning for increases in production weeks ahead is possible by use of the beginners' schedules, by means of which the number of apprentices and the time for hiring them can be definitely forecast. Normal progress of new operators being predetermined, provision can be readily made for all additional work. In retrospect, the extent and cost of all labor turnover is at hand.

Coincident with planning for standard operators, use of the indirect standard, broken down into its component parts, will permit laying out a program for changing the amount of indirect labor in proper proportion to production changes. Thus a foreman can guard against disastrous fluctuation in his cost efficiency percentage.

The Point System also offers a uniform basis for estimating,

computing, and comparing costs, along whatever line of control the accountant may desire. By multiplying the standard by the standard cost per point the standard cost of the operation is obtained. The total points on an article so costed give the total standard cost. Many operations ordinarily classed as non-productive and figured on a percentage basis, by means of point standards can be definitely charged at their true relative weight. Due to the fact that standard operators are paid premium at 75% of the point value the actual cost per point varies. As an accounting expediency, cost estimates are made at standard point value. Indirect premium costs can then be charged against this excess, any balance being credited to the section.

The analysis sheet shows, in the various excess direct and indirect costs per point, the actual charges in each factory section for the different kinds of other than standard labor. Thus representative data are furnished for determining such additions to the standard cost as are necessary, and comparisons between the costs set up and the actual costs can be readily made. By considering each department or section according to the total standard points produced therein, an exact means of proportionately allocating various general items of burden expense is at hand. Knowing the relation between the point production on each article and the total section points, a further breakdown can be definitely made.

In conclusion, some comments on what the Point System has accomplished and is still accomplishing in our experience may serve to accent some of the features already discussed. The first department started "on standard" in November 1920. Since then the Point System has been gradually introduced to all the manufacturing departments, the major part of the application being done in 1921 and 1922.

As an immediate result we had the satisfaction of realizing a substantial saving in labor costs, and, at the same time, of increasing the average earnings of the operators. Only a part of this improvement can be exclusively credited to the Point System. The benefits derived from a complete, thorough, entirely new time-study survey of all operations and a factory-wide house cleaning of all the old piece rates and hourly rates, hoary with tradition, would doubtless have been approximately the same regardless of the new system installed. It should be noted, however, that the Point System, by its very nature, compels such a wholesale re-

search. Furthermore, the very great incentive given the direct operators by the system is largely responsible for the results attained.

But we have long since ceased to compare pre-point system costs and earnings with those obtaining since the application of the Point System. We know in dollars and cents what was accomplished when the change was made. The Point System is no longer something new and different. It is accepted by every one at our factory as the regular Hood Rubber Company system of wage payment. So we now consider the Point System in the light of what it is accomplishing for us every day as current factory practice.

In the first place, we have a single all-inclusive term for expressing all phases of labor. We plan in points, record production in points, reward the effort and efficiency of both direct and indirect operators through points, compare workers, sections, and departments by means of point hour and summarize manufacturing conditions in points.

Secondly, we have an incentive plan of wage payment tying in all operators who aid in carrying our product through to completion, no matter from what angle. Due to the absolute separation between standards of performance and money paid each can be guaranteed in its own field and necessary changes made in the one without affecting the other.

Lastly, in the analysis sheet, management has a most useful tool for ascertaining along what lines man-power and machine-power have been spent and the money value of this expenditure. Excess costs are its responsibility. With these costs the analysis sheet mainly deals. Thus the senior executive, knowing the variations from standards, can make every effort to eliminate the causes permanently. It is physically impossible for the factory manager or department superintendent personally to see what is going on. With the analysis sheet on his desk he gets the picture.

Points tell the operator where he stands, they tell supervision where it stands, and they tell management how the whole labor structure stands. Through this medium all parties can work together with mutual understanding and confidence.

CHAIRMAN ALFORD: Mr. Conn has handled for us a most difficult topic in an exceedingly satisfactory way. The basis or method he has presented is far different from Mr. Walker's, but

you will notice the end results are comparable. So far as I know, this is the first time the Hood Company's methods have been presented.

Now we come to the third paper of the afternoon, by the executive in charge of manufacturing of one of the greatest manufacturing organizations in the country. This paper deals with group standards which are supposed to be open to serious objections on the one hand, and important advantages on the other, one advantage being simplicity in the accounting procedure. I present to you as the speaker who will handle this topic, W. F. Hosford, Vice President, Western Electric Company.

Mr. Hosford then presented his paper.

## GROUP WAGE INCENTIVES

W. F. HOSFORD

Vice-President Western Electric Company, New York

**T**HE present prosperity of American industry is without doubt due in a large measure to the success achieved by our industrial leaders in reducing costs by the adoption of more efficient methods of manufacture, the development of labor-saving machinery, and the introduction of wage incentive plans for increasing the productivity of labor. While the last of these elements is perhaps the most intangible one, the great importance of the more efficient utilization of working time is readily apparent when we consider the enormous yearly labor and overhead charges of our larger industrial concerns.

One of the very favorable features of the wage incentive method of decreasing costs by increasing production is that both the employer and the employee gain through the increased productivity. We all know that an increase in production reduces the overhead or loading cost per unit and it is consequently possible by increasing production to reduce manufacturing costs even though the direct labor cost per unit remains the same. In fact, where expensive machinery is employed, it might even be economical to pay higher unit labor rates in order to increase production beyond certain levels.

The problem of wage payment is one of the oldest which con-

fronts any line of commercial endeavor. In the case of day labor, the employee sells his physical and mental efforts for a predetermined wage, which is based on prevailing labor conditions, his skill and experience, and the class of work for which he is hired. To establish the most equitable wage, the relationship between effort and its compensation should be constant, so that as the employee increases his value to the management, his wage increases in direct proportion. Obviously, a wage scheme which provides this relationship is of the greatest benefit to the employer and employee alike, because the incentive for increased production is unlimited.

While wage payment on a straight day-work basis is necessary on certain classes of work which do not lend themselves to the application of incentives, it is *satisfactory* only for the type of work which attracts employees who are farsighted enough to be stimulated by the expectation of a reward at a rather remote time. For the average worker, however, the day-work system usually fails to stimulate production to an economical point. For this reason, the Manufacturing Department of the Western Electric Company operates very largely on an incentive basis, piece-work being the plan in general use.

Our Manufacturing Department at the Hawthorne and Kearny Plants employs approximately 24,000 people, occupies over 3,100,000 square feet of floor space, and produces annually over \$125,000,000 of manufactured product. All of the better-known processes and mechanical operations are performed, as well as a very large number of special and unusual processes. The product manufactured consists of some 13,000 kinds of apparatus, requiring over 110,000 different parts.

In the operation of a manufacturing unit of such size and variety, it would not be practicable to employ any one type of wage payment, except possibly day-work. Therefore, we have not confined ourselves to any one plan of wage payment, but have adopted the policy of using the plan which best fits the particular job, and, through the standardization of methods and operating conditions, we have been able to apply some form of incentive to over 85% of our productive labor. We have also succeeded in placing approximately 23% of our indirect labor on an incentive basis.

An important fundamental step in the application of incentives to the numerous phases of our manufacturing activity is the estab-

lishment of labor grades, or base rates, which are used as the basis for the incentive rates. All hourly rated occupations are classified into clearly defined grades in accordance with the class of work, the skill required, and corresponding conditions in the local labor market. Each of these grades covers a limited range of hourly rates, and is used as a basis for rating new employees and rerating experienced employees in accordance with their increase in ability and value to the company. Workers who remain on the same class of work are rerated at intervals within the range of the grade. This standardized grading of labor assists in maintaining uniform labor costs and also provides a ready means of classifying new jobs.

Before we go further, let us consider a few of the factors that must be kept in mind when determining the most feasible wage plan to use for a given set of conditions:

1. The plan must be sufficiently flexible to cover any jobs that may occur within the class of work involved, considering the period within which delivery may be required, the supply of work, and other factors of production outside the control of the workmen.
2. The compensation to the individual employee should be so far as possible in direct proportion to the effort put forth and must be as nearly uniform as possible for all payment periods.
3. Payment for the work should be made as soon as possible after the work has been completed.
4. The plan must be simple enough to be easily understood by the workmen.
5. A grading system must be provided whereby the employees are classed according to skill and are assigned a definite grade of work, so that they may receive compensation in accordance with their grade of skill.
6. The methods used must be as well standardized as possible, and the system of measuring output must lend itself readily to time standardization and consistency between different jobs and classes of work.
7. The cost of operating the plan, that is the counting, crediting, inspecting, and rate-setting expense, should be within reasonable limits.

8. Where possible, the direct supervisors should share in the incentive provided for the workmen, to stimulate closer coöperation in maintaining high standards of performance.

We have found that certain classes of our work are particularly suited to one certain type of incentive wage plan, whereas for other classes of work an entirely different plan is required. Consequently, as a result of our diversified activities, we have in use at the present time, in addition to day-work, a number of different incentive wage plans, although some of them differ from the others only in minor characteristics. These wage plans are individual piece-work, gang piece-work, gang premium, tasks, and an efficiency rating scheme, applied to some of our day-work jobs.

Individual piece-work, with guaranteed day wage, is that type of piece-work in which a definite price per unit is established for an operation or combination of operations performed by a single employee. The employee receives the piece rate per unit multiplied by the number of units completed, regardless of the time consumed in doing the work, except that should the employee fail to earn an amount equal to his day rate for the week, he is paid a guaranteed wage. Under all of our incentive plans, the day rate is guaranteed. Under the individual piece-work plan, the piece rate is so established that when average piece-work output is produced, the return to the operator is 125% of the base rate for that class of work, the total wage being in all cases directly proportional to the output produced.

Individual piece-work is best adapted to operations which can be performed by one employee, to classes of work on which each employee's production is easily segregated, and to those jobs which require inspection after each operation. It is the most direct form of incentive, in that the earnings of the operator are in direct proportion to his individual output. This provides the highest degree of incentive, and the application of this type of piece-work is, therefore, particularly desirable for jobs having a high ratio of overhead cost to labor cost.

It is an established fact, however, that individual piece-work is thoroughly successful only when a steady flow of work involving very little interruption is available, and on work which can be definitely outlined in such a way that each operator performs

only those tasks for which he is paid by the piece rate. Those jobs on which the work of various operators overlaps, or on which operators are dependent upon each other in performing a total task are more adaptable to group compensation plans.

The Group Wage Incentive, or "Gang Piece-Work" as we call it, is the term applied to that form of activity in which the efforts of two or more employees are combined in building up a common output unit or group of units, and in which each employee shares in the resulting earnings in proportion to his hourly rate, and the number of hours that he works.

Theoretically, "Gang Piece-Work" is best adapted to classes of work where the individual's efforts are not readily segregated, or where a number of operators are dependent upon one another for the attainment of maximum output. It offers a monetary incentive to groups of workers for maintaining higher standards of productivity and high quality, which in some cases can only be attained through close coöperation between the members of each group. It may also be applied to classes of work in which the functions of the group are not directly related and, in such cases, a spirit of competition between the groups enters into the scheme, which also acts as a stimulus for increasing production.

The grouping of employees on certain classes of work possesses advantages over the individual incentive plan where a combination or sequence of operations is necessary for mass production. Under these conditions, the group plan not only lessens the expense of inspection, but also provides a means of including miscellaneous indirect functions which influence the group productivity, such as portorage, tool and machine maintenance, supervision, instruction, preliminary inspection, and repairing.

Our first conception of the group idea came about in connection with assembly work, in which a number of successive operations on partial assemblies are required in building up the final assembly of a piece of apparatus. The satisfactory results that have been obtained through the coöperation stimulated among the employees, the flexibility of the plan, and the simplicity of its operation, however, have resulted in its gradual expansion, until it now embraces over 60% of our productive workers who function on an incentive basis. This includes such activities as woodworking, ironworking, wood and metal finishing, winding, stranding, wiring, assembling, adjusting, and many others.

Under the gang piece-work plan, all employees participating in the gang are assigned hourly rates in accordance with the labor grade class in which they are placed and are guaranteed this rate for the number of hours worked. The gang piece rates are established on the basis that the employees working at normal efficiency should earn at least 125% of the day-work value of the time credited.

The problems encountered in the various organizations in which this form of piece-work is used are necessarily different, and, in consequence, the gang plan has been set up in four forms to meet all of the variable conditions encountered on different classes of work to which it has been applied. Our present adaptations of the group incentive idea are:

1. Weekly gang piece-work
2. Bi-weekly gang piece-work
3. Monthly gang piece-work
4. Gang premium

There is a similarity in the first three forms, in that each is modeled so as to provide payment at the end of the period designated for the work performed during that period, but since the average job in various classes of work requires a different length of time for completion, the three different payment periods are required in order that the work may be accurately credited. These four forms of group incentives may be defined as follows:

1. Weekly gang piece-work is applied to activities in which a group of employees work together in producing a class of work that requires less than one week for completion of the average job.
2. Bi-weekly gang piece-work is applied similarly to classes of work which require less than two weeks and more than one week for the completion of the average job.
3. Monthly gang piece-work is applied to classes of work which require less than one month and more than two weeks for the completion of a normal job.
4. Our application of the gang premium plan is confined to employees working on automatic machines where the *rate* of output is fixed by the machine. The earnings of each group under this plan depend upon its ability to

keep the machines which they operate producing as nearly 100% of the time as possible. There are a number of elements under the control of the operators which directly influence both the quantity and quality of production, such as the proper care of tools, accurate gaging, stocking of the machines, and miscellaneous machine attention, such as oiling. Under the gang premium plan, the rates are established *per machine* and take into consideration the speed of the machine, its normal productivity (deducting normal machine idle time), and the amount of attention time required by the group per machine. These rates, as the name implies, are premium rates and apply only to the parts produced per machine hour over a predetermined required hourly output. The workmen are given their day wages to the point of the premium "starting output" plus premium earnings for all parts produced by each machine in excess of that figure. Each group of employees operates a number of machines, the average number of machines per employee in the respective groups ranging from one to seven, depending upon the kind of machine, the material being worked on, and the manufacturing tolerances required. By virtue of the premium method, the employees are protected when interruptions beyond their control result in one or more machines becoming inactive. Should an employee be operating four machines and normally receiving 28% balance, the breakdown of one machine would not cost him 25% of his earnings as in the case of piece-work, but only one-quarter of the premium earnings, or about 5% of the total wage, because each machine earns a separate premium for the group by which it is operated. The gang premium system, in general, is adapted to the same classes of work as gang piece-work, but it is used only where machine activity is of prime importance in determining the earnings of the operator.

Practically speaking, aside from the premium plan, there is very little difference between our various types of gang piece-work, except in the method and period of crediting the work. Therefore,

since the monthly gang piece-work plan is the one which we use most extensively, and as this plan is quite representative of the others, I will take only enough of your time to convey a general idea of how this one plan works.

In building up a piece-work gang or payment group, all employees contributing toward a common unit of output are organized into a gang under the supervision of a gang chief. In cases where the work involved is such that certain functions interlock or are common to several groups, the groups in question are combined into larger gangs under the supervision of section chiefs, and these in turn may be combined into a still larger gang, which in many cases involves an entire operating department. Our Loading and Repeating Coils Department at Hawthorne, for instance, consists of four sections and thirteen gangs, involving 362 productive employees. The department is supervised by a foreman and two assistants, and is served by thirty non-productive workers, such as line supervisors, porters, stockmen, and process inspectors, bringing the total personnel to 395. The division of gangs in the organization is made by general classes of work, such as winding, finishing, and assembly.

Because of the interlocking relationship of the various group functions, all of which contribute toward the production of the finished loading and repeating coils, for which the department as a whole receives payment, this entire department, with the exception of the foreman and assistant foremen, is set up as a single piece-work gang.

The time required by the individual or group to perform each operation or combination of operations is calculated from previously established time standards which are developed from studies of the time required to perform various motions or fundamental elements of operations. This subject, time standards, is one of considerable size which I will not attempt to go into in this paper. In establishing new piece rates, if a standard is not available for the job in question, an individual time study is made.

Operation or unit rates are then set up, showing the time required to complete each component part of the total job. A summation of these units, plus certain allowances, when converted into money by means of the various labor grades, represents the gang piece rate.

The allowances I just mentioned cover a number of non-pro-

ductive functions for which definite unit rates cannot be set up, but which contribute, nevertheless, to the general efficiency of the group. These are included in the form of a percentage of the whole, after the total job rate has been set up, and cover such elements as supervision, tool and machine care, the instruction of new employees, the making of small quantities, the repairing of defectives, and portage. Thus the non-productive workers who assist the gang, and really take quite an important part in producing the over-all result, participate directly in the gang earnings. This stimulates them to aid the productive operators as much as possible in maintaining high productivity.

Our application of these non-productive allowances varies on different classes of work, but there are three factors for which allowances are made in all of our gang piece rates. These are for personal time, training, and supervision.

All of our piece-work rates include a five-minute allowance per hour for the employee's personal needs, that is, the net production per hour is based on actual working time of 55 minutes per hour.

The allowance for training covers the inefficient work of new employees until they have reached a point of average productivity. This allowance figure is based on the normal number of employees in training at one time and the average time required to bring the new employee to the point of normal productivity, which naturally varies for each different class of work. Using a constant figure in this manner is, of course, not the most accurate way of doing it, but when the allowances are calculated according to classes of work, using normal labor turnover values for each, we get a result that works out quite satisfactorily. It is not a large item, the average allowance being in the neighborhood of 3%, and we find that fluctuations above or below this average have no appreciable effect on the piece-work earnings. New employees do not participate in the gang piece-work earnings until they have been with the company for a period of two weeks. During this time, they are paid their straight day wage.

Gang chiefs and section chiefs who participate in gang piece-work earnings must necessarily perform a number of non-productive functions, such as the assignment of jobs, making out time credits, checking the quality of work, making minor machine repairs, and numerous other personnel and statistical functions which are an essential part of the supervisor's job. The amount of

this work, of course, varies with each organization, as does the number of employees normally included under each supervisor, and, as a result, the gang rates of different organizations include varying supervisory allowances. This allowance in each case is expressed as a percentage figure of the total piece rate, and covers only the percentage of supervision that is necessary for successful operation.

The total piece-work value credited to a gang at the completion of the payment period is determined by a summation of the job earnings during that period, the credit on each job being found by multiplying the number of units produced on each job by the rate per unit.

To show how the earnings are distributed among the workers in a gang at the end of a payment period, we shall consider a typical case involving a gang of 20 employees who are working under the monthly gang piece-work plan. Let us assume that the gang of 20 workmen accumulated a total earnings' pool of \$3,160 and that the day-work value of the time credited amounted to \$2,340. The difference between the day-work value of all the time credited and the total piece-work earnings amounts to \$820, which is termed the piece-work balance. Dividing the \$820 by the day-work value, we find that the piece-work balance is 35%. Each employee in the gang then receives his pro rata share of the piece-work balance, or his hourly rate plus 35%. To illustrate, let us take an employee whose hourly rate is \$.60 and who spends 192 hours in the gang during the month. His day-work value for this time is \$.60 times 192 hours, or \$115.20 and his share of the piece-work balance is 35% of this, or \$40.32. His total earnings for the month are the \$115.20 of day-work, plus his \$40.32 share of the balance, which amounts to \$155.52 in all.

Obviously, to receive the total piece-work earnings in a single payment once a month would be rather unsatisfactory from the standpoint of the factory personnel. In order to provide a regular weekly income, therefore, the day-work wage was formerly paid weekly for the first three weeks of the month, and on the fourth week, the day-work wage for that week plus the accrued piece-work balance for the month. This method would pay the operator whom we used in the previous example \$28.80 a week for three weeks and \$69.12 on the fourth. This method did not provide a sufficiently uniform wage to be entirely satisfactory; therefore, we now predict

the earnings of each gang based on previous average performances, and pay the predicted balance weekly after deducting a small amount as a safety factor. The same operator now will receive something like \$38 each week and the remaining \$41.52 at the end of the month.

This scheme of paying on a weekly increment at nearly the full percentage each week is made possible largely by the fact that there are sufficient steady running jobs to give a comparatively even flow of work. The miscellaneous small lot schedules constitute, as a rule, only a small portion of the job, so that the normal earnings percentage can be forecast very closely from previous performance. As illustrated, the weekly payment is usually 80% to 90% of the anticipated monthly balance.

This feature of our piece-work system has very largely removed the payment distinction between our different gang piece-work plans, so that the only remaining difference between the weekly, bi-weekly, and monthly gang piece-work plans is the final accounting, to determine the over-all balance earned by the gang at the end of each payment period.

Only a small percentage of our shop work is handled on a day-work basis. In the comparatively few cases where the job is small and requires only a short period of time for completion, the expense of establishing a piece rate may not be justified. Therefore, on day-work jobs, which are performed by a group whose normal output consists of a majority of piece-work jobs, the time spent on day-work is charged into the gang just as if the job were piece-work, and the gang is credited with the day-work value of the job. This time, of course, yields no piece-work balance, and this naturally lowers the percentage of the piece-work balance for the period in which the time was charged. However, the increasing use of Time Standards throughout our Manufacturing Department, which makes it possible to establish piece rates at a considerably lower cost, is resulting in an increased application of piece-work to small lot jobs and a continuous downward trend of the percentage of work performed on a day-work basis.

In summary, the gang piece-work system, with the numerous special features and modifications which have been included can be successfully applied to practically every line of manufacturing activity and has proved to be well suited to some classes of work which were formerly looked upon as strictly day-work jobs. We

might place in this category such indirect functions as plant maintenance, window washing, store-keeping, trucking, repair work, and a number of clerical jobs.

High working efficiency is attained under this class of wage payment by the fact that many of the associated non-productive functions are included in the gang which results in highly co-operative effort between the productive and non-productive employees. Due to the personal monetary interest of every member in the performance of the entire group, it has been found that the amount of supervision required is reduced to a minimum. Every employee is financially interested in seeing to it that he and his neighbors do a fair day's work and that the general output is kept up to the normal performance of the group. We find that the new employees are given a helping hand by other members of the group, until they are capable of producing at the normal gang efficiency. The slacker has no place in the gang system, as his neighbors are quick to inform him that he is expected to do his share of the work. Difficulties of this type seldom are brought to the attention of the management. They are usually taken care of within the group to the satisfaction of all concerned.

The gang supervisors maintain records, showing the performance to each member of their group, which gives them an opportunity to locate and assist the members who repeatedly fall below the normal performance of the gang. New ideas are often introduced by operators in the way of improving the efficiency of the operation, and are invariably passed along to the other members of their groups to aid in increasing the over-all output. Under individual incentive plans, such ideas are seldom broadcast in this manner, as the individual usually takes pride in having discovered a means by which he can surpass the performance of his fellow workmen.

Under the gang plan, no inspection is made by the regular inspection organization until the work leaves the gang, and credit is allowed for the production of good work only. This results in expeditious handling and a smoother flow of work, in order to deliver the work to final inspection with the least amount of delay. The operators in the gang are trained to guard the quality of the work and prevent defective work from reaching succeeding operations, for every participant knows that time spent in performing additional operations on defective work is lost time, and, there-

fore, a penalty to the gang. Since the inspection and crediting operations are performed but once, the cost of these functions is reduced to a minimum.

The feature of prorating the piece-work balance to the members of a gang in accordance with their day rates makes it possible to recognize the skill and ability of the different operators through the relative values of their day rates, as each member receives the same percentage of his day-work value. We feel that this plan works out fairly to all concerned because of the careful attention given to the grading of labor and to the revision of day rates at regular intervals, at which times the individual performance of each employee is considered. If an operator has shown an improvement in his efficiency and the other factors which increase his value to the company, he is rerated accordingly at these revision periods.

We have found that the gang piece-work is economical to operate. Where it is employed, it is only necessary to maintain records of the day-work time charged to the gang by each operator and to issue work tickets for the entire job. No individual operation work tickets are required. Production control is simplified, due to the fact that it is to the interest of each operator to move the product through the gang as rapidly as possible in order to receive credit for the work performed within a specified time. Payroll expense is minimized, due to the simple and uniform methods used in recording each employee's time and to the fact that the percentage of piece-work balance of an entire gang is determined by one calculation. As previously pointed out, the operator's total wage is simply his day-work value plus his prorated share of the surplus over the total gang day-work value. Fewer piece rates are required to handle the crediting of work, due to the use of job or gang piece rates rather than individual operation rates.

Uniform earnings result from the use of gang piece-work, as any slight variation due to high or low piece rates is leveled out. This plan also eliminates disputes over the apportionment of work, which occasionally occur in the case of individual piece-work.

This type of piece-work creates a friendly interest between the participants in the gang and between the gang and the management, and, therefore, reduces discord and dissatisfaction. This community spirit is extended to new employees, who are encouraged and assisted to put forth their best efforts in learning the job.

The gang plan and the method of payment are readily under-

stood by the operator, since all participants receive the same percentage balance.

Gang piece-work discourages labor turnover and absences, due to the group spirit and to the fact that the maintenance of a steady, highly trained personnel insures maximum gang earnings.

Opposed to these advantages are two arguments which are usually given as disadvantages of group incentives. These are: First, lowered individual efficiency, and, second, less individual opportunity.

It is undoubtedly true that the gang type of piece-work has the tendency to lower slightly the efficiency of a few outstanding operators, but it should also be kept in mind that under gang piece-work, this disadvantage is partially balanced by the fact that the below average operator is more quickly trained up to average performance and that highly efficient methods devised by the operators are put in practice by the entire gang more quickly than under any other type of piece-work. While each operator is placed on his own initiative and receives the full benefit of his personal effort under the individual piece-work plan, this type of piece-work will not function successfully under all conditions, and it is in those cases where individual effort is not easily segregated that gang piece-work is most successful.

We partially circumvent the argument that individual opportunity is lacking under gang piece-work by the maintenance of individual efficiency records. These records are used at the periodical rate revision periods and in the selection of candidates for promotion to supervisory positions.

I do not wish to convey the idea that we consider our group incentive plans to be superior to individual piece-work. On the contrary, we feel that individual piece-work is the highest type of incentive, and we apply it to all classes of work where we find it practicable to do so. However, since the satisfactory application of individual piece-work is limited to definite manufacturing conditions, we are compelled, due to varied manufacturing activities such as I have described, to resort to the group method of wage payment. However, the gratifying results obtained from the application of the group plan lead us to believe that, in general, the decrease in efficiency incurred by the loss of the direct individual incentive is offset at least to some extent by the coöperation, enthusiasm, and the community spirit developed by gang piece-work,

and by the decreased clerical, payroll, and inspection costs resulting from the use of the gang piece-work plan.

CHAIRMAN ALFORD: You probably were struck as I was, by the degree to which Mr. Hosford uses the wage payment incentive system—80% of direct labor, and 23% of indirect labor. It is doubtful if there is a better record than that in any industrial organization of large size in this country, and, furthermore, when he told us 60% of the direct labor on the incentive plan was using the gang piece-work system, he has offered convincing testimony to the advantage of that method.

Now we come to the period of discussion. Oftimes this part of a session of this kind brings out points of particular interest. Several members of the association have signified their wish to enter into the discussion. I venture to ask each man to confine his remarks to five minutes.

I take pleasure in calling upon Mr. William Baum, Controller, Real Silk Hosiery Mills, Inc.

MR. WILLIAM BAUM, *Real Silk Hosiery Mills, Inc., Indianapolis, Indiana*: The intricate subject of time studies and wage incentive plans has always been considered the province of such associations as The Taylor Society, The American Management Association, and The Society of Industrial Engineers. I think it is quite significant that it is now being taken up and discussed by the National Association of Cost Accountants. It is no longer practical or desirable to draw a sharp line of demarcation between industrial engineering and cost accounting, both activities blending into one function, the purpose of which is to increase profits through the reduction of operating costs. In my organization, the man in charge of costs is also in charge of time study and wage plans, because the very close association between time standards and cost standards is recognized.

In a recent discussion in Indianapolis, on the same subject, I made the statement that I do not believe in piece rates because of the many disadvantages connected with the piece-rate system. It is extremely difficult even for experienced time-study men to set the proper rate on a new operation. When the operators have performed the job for a number of weeks, they become so skillful that they can increase their production considerably, and they may earn more money than the company thinks they should earn. The

natural result is that the company considers the original piece rate too high and yields to the temptation of cutting them. This makes a very bad impression upon the employees who protect the existing rates by holding down the production. This "soldiering" defeats the very purpose of the piece-rate system and causes an increase in overhead. There is one thing to which I wish to call attention and which is not often touched upon in a discussion of this kind, namely, the great importance of centering attention upon the human aspect in establishing wage incentive plans. It is not so long ago, when the so-called time-study man, with the stop-watch in his pocket, sneaked behind the worker and took his time. Of course, this is not time study. The modern time-study man sells himself to the worker and assures him that time-study will benefit him as well as the company, and says to him, "If I make this time study I may find things which never occurred to you or to me. I may find that you operate a machine which causes you to exert a great deal of mechanical effort, and, perhaps by making a little improvement on that machine, we can reduce fatigue. Or we may find avoidable delays or defective material."

I remember one case where it was impossible to get production from a certain machine operated by a girl who had to push a pedal with her foot. When we tried it ourselves, we found it took considerable mechanical strength, and by arranging a counterweight, which greatly decreased the fatigue, production was increased 25%. One of the speakers spoke about an increase of 1050% in production. I quite believe this. Some time ago I talked to my superior officer and told him proudly that the production in a certain department had recently been increased 50%. He did not give me much credit, saying that the operating conditions in that department must have been terrible.

I am wondering how many of us who are interested in time study keep a card index not only of the total times of an operation but also of its various elements. For instance, if we keep a record of cutting a certain pattern of cloth per inch or per yard, we can readily make use of this record for any similar piece without making a new time study. In conclusion, let me say that it is the accuracy of the time standards rather than the system of wage incentives which determines the success of a plan. An incentive plan which is perhaps not quite suitable to the particular operation can be made a success by proper supervision and individual follow-up.

On the other hand, any of the modern systems to which we have listened this afternoon may fail without such supervision and personal control.

CHAIRMAN ALFORD: Mr. Baum has given us an excellent start on the discussion in showing the different points of view, but I will appeal to the other men to talk about five minutes.

Alfred S. Sear has had experience with a point system of wage payment.

MR. ALFRED S. SEAR, *Cost Accountant, The Wadsworth Watch Case Co., Dayton, Kentucky*: Mr. Chairman, Ladies and Gentlemen; we have had quite a lot of experience with wage incentive plans. We were faced with the condition several years ago of operating our plant on the Day Work Plan in a very highly competitive market, and we were forced to do something to reduce costs. Naturally, we reverted to the incentive form of wage payment. At that time we did not go into any of the so-called engineering methods of wage payment, but adopted a system suitable to our own needs which we styled the "Minute System." We used the stop-watch method and set up our rates on actual working conditions, allowing the operator the proper fatigue and percentage of profit in the rate. Over five or six years of experience we found that the average weekly earnings of our employees amounted to about 25% over the base rate; the system worked satisfactorily to every one concerned; no trouble was experienced during the installation or during the years of operation. We realized that there were several deficiencies in the system. One was that we had no control over the efficiency of the employee—in other words we had no yard stick to compare the performance of the individual employee by other than the weekly earning comparisons. There was no incentive for our foremen, because the system did not provide for a Foreman's Bonus.

We guaranteed our minute rates for a period of three years; this guarantee was absolute as to present-day methods, the only reason for any change under the guarantee being a change in manufacturing methods.

The system also provided that our employees would be allowed to earn up to 50% of their base rate and all over this amount would be split on a fifty-fifty basis with the company. Very few went over the 50% allowance.

In regard to the remarks made by the gentleman from the Real Silk Hosiery Co. about cutting rates when employees' earnings climb too high; we experienced some of the same trouble and invariably found that the condition of the work had changed, making the high earnings possible. In cases where we are not sure that the product is mechanically correct and that a change would affect the rate as set, we issue temporary rates to cover the period in question.

In January this year, we engaged the services of a firm of Wage Incentive Engineers to install a more scientific wage system. This system corrects the deficiencies of our old method; it provides for a measure of efficiency on each employee, pays a foreman's bonus, and the men are paid up to the limit of their earning powers. The rates are scientifically set, fair to both employer and employee. Under such a system one can expect to get 60 minutes work for sixty minutes pay and surely this is a fair enough argument to satisfy all concerned. The installation is not complete, but so far everything is going along smoothly to the satisfaction of every one.

Personally I am a firm believer in the wage incentive. To me it seems to be an economic necessity. If we hope to maintain the high standard of living in this country, high wages must also be maintained. To do this we must receive a dollar's worth of effort for each dollar of wage paid. Hence, the employee must produce more and this can only be accomplished by giving him some incentive.

MR. M. M. MONROE, *Inland Manufacturing Co.*: I cannot agree with the gentleman from Indiana who says he "doesn't like piece rates." I hold this fact to be self-evident, that the development of wage incentive plans has been a very important factor in the industrial development that has taken place in the last few years. Those of you who have had experience with plants before and after installation, will admit that the installation of time standards and wage incentive systems has achieved results that are practically impossible under the day work or straight salary plan. That is why we find, today, in almost all well-managed businesses, some form of wage incentive plan not only for productive operations but also, wherever practical, for non-productive or indirect work as well.

Mr. Baum's chief objection to "piece-rates" is that they do not

make for quality. I believe this might be true where supervision and inspection are paid entirely on the basis of the speed of production. It seems to me that incentive plans for supervision should give consideration to a lot of other factors such as control of indirect expenses, quality of product, etc.

In General Motors, we operate for the most part under the Group Bonus Plan. This plan contains certain features of the group piece-work plan as described by Mr. Hosford, and the point plan as explained by Mr. Conn. It is our opinion that the group idea is the more important of the two, in so far as our problems are concerned, although we consider the point feature to be an improvement over the straight price rate. I should like to hear from Mr. Conn and Mr. Hosford as to their views on the advisability of combining these features.

MR. CONN: Of course, the point system is primarily assumed to be one of individual incentive, but I might say that in our plant we have several instances of group application on assembling groups and on conveyer units, and the point system has been applied to groups running into thirty, forty, and fifty people. Although the individual incentive is, of course, taken away, the group incentive is substituted and the general effect is approximately the same. As far as point system procedure is concerned, it can be just as well applied on a group basis as on an individual basis.

MR. WALKER: A recent speaker said he didn't favor piece rates because of lowering quality. If I gave that impression, I want to correct it. I am a strong advocate of piece rates when the standard has been determined properly through determination of the proper job time standard. I do not believe piece rates under those conditions do weaken quality. I have seen great improvements under those standards.

MR. MONROE: I was referring to the gentleman who led the discussion.

CHAIRMAN ALFORD: We have time for one more discussion.

Mr. Walker, in his paper, referred to Dr. Frederick W. Taylor and the great work he did for American industry in connection with a differential piece-work plan. As a guest with us this after-

noon, we have a man who was one of Dr. Taylor's closest associates, a man to whom American industry owes a very great debt because of his researches into improvements and methods of operation, manufacturing and management, and to the installation work which he did over a period of many years. I should like to invite him to the platform, for I know he has some very decided views on the topics we are discussing this afternoon. Mr. Carl G. Barth.

Mr. Barth then made a short address in which he presented his compliments to the convention and congratulated the Association on the fine work it has been doing.

CHAIRMAN ALFORD: The time has come to close this session. I believe it is the custom to have the chairman summarize briefly something of what has been said. I suspect that the outstanding fact that emerges from this session is that every speaker, who has told of the results of standard wage systems, has indicated that they have resulted in lower costs. I now turn the session back to President Stevenson.

PRESIDENT STEVENSON: Gentlemen, I think we have had a very good session. I am a little sorry that a bit more stress was not put on the relation of these standards to our work in determining standard costs, because it is my own experience, as I go around the country, that there are a good many plants that would like to install standard cost systems, but they hesitate to do it because they don't know quite how to determine the standards. Of course, all of these incentive methods are based on the predetermination of standards, as has been described this afternoon, and that is the way to do it.

You won't have a standard cost system until you have standards. If you hook the two together, you will make money out of the saving in direct and indirect labor costs, provided you have enough marketing distribution to dispose of the increased production. In any case, it will more than pay for making the determination. I think it is a great mistake to delay the installation of standard costs, which certainly this Association as a whole has come to consider an effective way of handling costs, simply because you are not in a position to tackle the determination of standards.



**SESSION III**  
**THE SIMPLIFICATION OF INDUS-**  
**TRIAL ACCOUNTING**

**WEDNESDAY MORNING, JUNE 13, 1928**

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**This Session Was Organized Under the Direction of**  
**PROFESSOR T. H. SANDERS**  
**Harvard School of Business Administration,**  
**Cambridge, Mass.**

FLOYD H. ROWLAND, after graduating from Columbia University, specialized in law at Columbia and at Fordham Law School. He then entered the employ of the Provident Loan Society of New York to introduce new methods and a pension system. During the war he was with the American International Shipbuilding Corporation. He was on the staff of the Stevenson Corporation for a brief period and then with Wm. Demuth & Co., manufacturers of smokers' articles. After this he was a member of the firm of W. V. Davidson & Co., Industrial Engineers. He is now Chairman of the Board of Floyd H. Rowland & Co., Inc., specializing in tabulating machine methods, cost accounting and industrial consolidations.

W. J. MERRILL, after interruption of his college course by war service, was graduated from the Utah Agricultural College. He then entered the Harvard Graduate School of Business Administration from which he received the degree of Master in Business Administration. He went immediately as Assistant to the Credit Manager of William Whitman Company, Inc., of New York City. In January, 1927, he became associated with the Royal Baking Powder Company as Budget Officer and was made Comptroller of that company the following September.

MRS. E. E. WOOLSTON, after taking the commercial course at Eastman College, went to New York and was for a number of years with the general eastern office of the Bishop-Babcock-Becker Co. From there she entered the employ of the Dutchess Manufacturing Co. to organize their correspondence, billing, filing and recording departments. She later was made Office Manager, which position she now holds.

BRADFORD CADMUS was graduated from Columbia University in 1923 with the degree of Bachelor of Arts. Following his graduation, he worked in the Methods Department of the Bell Telephone Laboratories on auditing, accounting, and general office methods. In 1927 he became associated with the Royal Baking Powder Company as Supervisor of Methods, which position he now holds.

## THE SIMPLIFICATION OF INDUSTRIAL ACCOUNTING

THE meeting convened at ten o'clock.

PRESIDENT STEVENSON: Ladies and Gentlemen, we will now open our third technical session. Our session this morning, as you all know from the program and various announcements, deals with the Simplification of Industrial Accounting.

The session will be handled by Prof. T. H. Sanders, of Harvard University, a member of the National Board, and a man whom we all love and respect. We have a deep regard for his ability, and I am sure that he has a session which will be of great interest to us all. I take great pleasure in turning the meeting over to Professor Sanders.

CHAIRMAN SANDERS: Mr. President, Ladies and Gentlemen: Last night, at the meeting of chapter officers, a gentleman from New York referred to the rest of the world as the "rural communities." We immediately forgave him, however, because he added a pathetic request to the chapters from the rural communities to tell the New York Chapter how to win the Stevenson Trophy. This morning, among other things, we may be able to demonstrate to that gentleman that not all of the rural accounting is found outside of New York.

Another impression that seemed prevalent was that this session would confine itself to the enumeration of a series of tricks and shortcuts to reduce the work a little in the accounting department. We want to go much further than that; we want to bear in mind that the accounting department must expect to be measured by the same measure that is applied to the production and other departments of the business. In other words, we want to ask ourselves once more, "What are the fundamentals of our profession? What are the fundamental objectives which must be met—and what are the superfluities that can be dispensed with? In fact, we turn to one of the features of yesterday's sessions, the

super-comptroller, the man who is going to act as a balance in the organization of the business and who will use accounting data to that end.

This week, in other quarters than this, it seems to be a time for keynotes and planks, and I shall take only a few more minutes to mention one or two keynotes and planks. There are two items which I would regard as keynotes for this session. The first is that no records and no compilations of data are of any use unless they serve either as an instrument of manufacturing control or as an aid in the determination of selling prices and selling policies, or as an instrument of accounting and financial control. You will think of a variety of purposes and objects, but most of them can be fitted into these three main groups. The second is, as stated yesterday, that reports and statistical data put before executives must look forward as well as backward. These reports must not only be retrospective, but an aid in determining what is going to be in the future. With those two fundamentals in mind, we have assembled this morning a group of speakers who can give us some examples in this connection.

It is well understood among us that any accounting plan must adapt itself to the organization in which it is applied. It is not uncommon to state that sometimes the organization must be adapted to the accounting plan, not because the accounting plan is superior, but because the attempt to work out a logical accounting plan develops defects and weaknesses in the organization which ought to be corrected. Therefore the first presentation on this subject will be from a gentleman who will talk about business organization and its relation to accounting.

If you are going to simplify your accounting procedure, you must first have a straightforward organization, and it is useless to try to simplify the accounting procedure if you have a conglomerate and unwieldy organization. This is not limited to the single firm; sometimes we come to have amalgamations, consolidations of several firms in the interest of economy. Some people will say that this is not accounting, that it goes beyond accounting; but it is also here that the critics of accounting say that accountants ought to go further than they commonly do; and, unless we are prepared to supply some of the data needed to guide such undertakings as this, we will not deserve the name or high standing of the profession which we are trying to achieve.

I shall therefore devote no more time to introductory remarks, but will call upon Mr. Floyd H. Rowland, Floyd H. Rowland & Co., New York City, who will talk to us on "The Simplification of Industrial Organization." Mr. Rowland.

Mr. Rowland then read his paper.

## SIMPLIFICATION IN ACCOUNTING THROUGH SIMPLIFICATION IN ORGANIZATION

FLOYD H. ROWLAND

Floyd H. Rowland & Co., New York City

**T**HE subject listed on the program would seem to indicate that this paper would deal with a discussion of accounting problems from the standpoint of detail accounting records, ledgers, etc. It is my intention, however, to omit any reference to detail accounting records and to confine this paper to the simplification of accounting resulting from a simplification in organization. This narrows my field so much that I probably will not be able to find enough data to last more than two of these sessions.

There seems to be a widespread objection to simplification. As an engineer, I have found executives trying to run their business, sitting in the midst of all kinds of complicated records, endeavoring to extract the simple facts pertinent to their business success by much the same process as these cross-word puzzle fiends attempt to solve their puzzles. In many instances, the result is the same. Their guess may be right.

I am going to take some of my own medicine and reduce this subject of simplification right now to two elements. For the want of better phrases, I am going to label them simplification by definition and simplification by expansion. If these terms are not clear, I can at least claim that they are simple words.

### Simplification by Definition

Let us now examine this question of simplification by definition. Why is it so important? Before answering this question, I am going to take the liberty of further simplifying the matter by limiting my talk to manufacturing enterprises.

The day when the manufacturer could gauge possible sales by past performance is practically over. History may make interesting

reading, but it will not have much effect upon aiding a concern to stay in business and make a profit. In recent years production has increased to such an extent that in many cases it has exceeded the limit of market requirements. This limit has been temporarily extended by the introduction of installment selling, but production is catching up. The ordinary remedy of automatic contraction of production through the elimination of the weaker and less efficient companies has not taken place, due to the easy credit conditions. The agony is thus prolonged. A strong buyers' market has been the result. The evil day cannot be postponed forever. It behooves every business executive, however, to make his business more efficient and more flexible for quick adaption to constantly changing market conditions. If he does not do so, we will soon be able to cut down the size of our telephone books. They are too large anyway.

The greatest internal difficulty in the conduct of business today is the understanding of the relation of cause and effect. To bring about the possibility of understanding this relation, the first step is to secure an analysis of what is happening today. Most businesses appear complicated only because they have never been really analyzed and each function defined and reduced to a simple statement of what is to be accomplished. After this analysis has been made, steps should be taken to insure that the business will remain in this simple form by the introduction of the following measures, which I include under my first major premise of definition:

#### A. DEFINITION OF MARKET

A thorough market analysis must be made to determine consumer demand in general and in each territory for each type of product manufactured. This study should be extended to possible markets for similar products which can readily be added to the line and to competitive products. These data in hand, a basis is available for intelligent merchandising. Tabulating equipment will be found helpful in keeping these data current. Unless it is kept up to date, it is of no use.

#### B. DEFINITION OF SALES REQUIREMENTS

With the data available from market analysis, it is no longer necessary to guess at sales requirements. A sales budget should answer this problem.

Sales budgets must be carefully built up to be of real use.

They must start at the bottom, progressing from the individual salesman to the branch manager, to the general salesmanager, etc. A sales budget imposed by the salesmanager without giving the salesman a chance to present his case will not produce the best results. If the salesman agrees that he can sell a certain line and quantity of merchandise, the sales budget will serve as a great incentive.

General sales budgets are usually found to be of little use.

They must be subdivided to types of products to secure the greatest possible outlets for the most profitable types of merchandise. A detailed sales budget leads automatically to a predetermined turnover or inventory. At this point a warning is necessary to avoid the pitfall of stressing financial turnover too much and to regard it as a cure-all. If the physical turnover of each individual type of merchandise is watched, the financial turnover will take care of itself.

#### DEFINITION OF MANUFACTURING REQUIREMENTS

New ideas frequently lead to extremes. I have known many concerns to regard the introduction of the sales budget as the sole remedy in the present highly competitive market. The result is often seen in excessive inventories and the shifting of the burden to the manufacturing end by the placing of many excessively small orders, too often followed by cancellations. The result is an increase in manufacturing costs and a slower turnover of work in process inventories.

Sales budgets which are not coördinated with manufacturing budgets do not bring the desired results. After the sales budget has been set up, its requirements should be reflected in a manufacturing budget. It then becomes possible to introduce inventory limits for material, process, and finished stock inventories. This use of limits introduces the element of economy into budgets and prevents them from defeating the very purpose for which they were originally devised.

#### DEFINITION OF COSTS

Manufacturing budgets are based upon expected costs. It therefore becomes necessary to devise a cost system which

will lend itself to a predetermination of costs and hence of profits. A standard cost system will supply such a means and in addition offer a most valuable aid in the efficient control of production through the principle of exceptions. All departings from standard or expected bases are forceably brought to the attention of the management. The average run of cost systems does not furnish the information required for budgeting. Here, again, simplification is the answer.

#### E. DEFINITION OF PRODUCTION AND MERCHANDISE CONTROL

The sales and manufacturing budgets furnish a solid basis for management decisions and control. Deviations from the budgets can be detected and the necessary action taken to bring them again in balance. It is, however, still essential to establish control over the product moving through process and over the different inventories.

Manufacturing schedules and inventory control systems furnish the required means. These are of prime importance in determining whether the merchandise required by the budgets will be available. The sales department can ascertain the possibility of delivery and, if necessary, secure the data essential to adapting the manufacturing program to new conditions.

Simple scheduling methods can be made effective and generally can be installed at less expense.

#### F. ORGANIZATION

Each of the foregoing subjects leads to, and is a part of the major subject of organization. Each function of organization must be clearly defined and overlapping functions eliminated. The simplest organization is the most efficient. I know of nothing quite so sad as an organization where responsibility cannot be fixed and where there is ample opportunity to "pass the buck."

We have now turned the searchlight of truth on business. If each of the elements which we have taken the liberty of grouping under the process of simplification by definition is reduced to its simplest equation, we have done our best and will at least "know the worst," as the expression goes.

I have tried to find a way in which to tell the simple story to an executive so that he would get all the elements having to do with the control of his business out where he could see them. I spent four hours at a dinner recently, going over a similar program with the president of a large company, trying very hard to show him that his company was going down hill, that his earnings were declining, and, if he didn't take pretty desperate steps to find out why, I wouldn't guarantee what the results would be. That didn't make any impression. He said all I had outlined he wanted to do, but he could do it in a couple of weeks, and that would be all there was to it. I couldn't see how it could be done, and done properly, in two years. That just brings out the single fact that business men sometimes don't realize just what you mean when you tell them they need a standard cost system, or need to bring things out in such a way that they can be visualized. However, although the average firm may have all kinds of statistical reports, my first reaction is that it does not need a new system, but, usually, that it should throw away about half of the one it has. This brings us to the next phase, which is simplification.

### **Simplification by Expansion**

In the foregoing paragraphs we have discussed the simplification of the individual business.

While a great deal can be accomplished by the process of definition, there may be so many instances where the results obtained are insufficient. This means that there are factors outside of the individual enterprise which prevent the showing of a satisfactory profit. We may yet be able to cut down the size of our telephone book. This implies bankruptcy. Rather than have this sad plight, let us discuss the possibilities of simplification by expansion or merger with other companies in the same plight. This method may still help the telephone book. Before progressing with this subject we want to emphasize the fact that there is no intention to imply that the process of definition should not be applied to mergers as well as individual companies.

#### **A. VERTICAL MERGER**

Two different types of mergers must be considered. The first, the vertical merger, combines the different stages of activities from the purchasing of the raw material to the delivery

of the finished product to the consumer. In the silk industry, upon which my discussion will be based, a complete vertical merger would combine in one enterprise the control of the raw material, the production of artificial yarns, the throwing of materials into threads for weaving, the weaving of cloth, the converting of this cloth into salable fabrics by dyeing, printing, etc., and finally the financing of sales. Each of these operations is now in most cases performed by separate companies, each trying to make a profit. Each one looks to the previous one for work and has to guess at its position. Vertical mergers do not always include all of the operations described in the foregoing paragraphs due to natural economical conditions.

#### B. HORIZONTAL MERGER

The second type of merger may be described as a combination of a number of enterprises of the same or similar functions. To revert back to silk, a combination of silk weavers would constitute a vertical merger. The type would also exist in slightly different form where weavers and knitters combine. The vertical merger is founded to obtain simplification through larger buying power, specialization in manufacturing, and more economic distribution. The horizontal merger usually results in a simplification of the management problems through a better seasonal distribution of work and a stabilization of profit. This distribution as to type is not always clear in practice. It frequently becomes necessary for a vertical merger to expand horizontally to obtain sufficient volume to bring all operations to the same capacity.

#### Determination of Effectiveness of Vertical Merger Illustrated by Discussion of Silk Industry

##### Scope

Let us proceed upon the basis that our merger will comprise all functions from the purchasing of silk to the financing of accounts receivable.

Since each of the functions mentioned previously must be con-

tinued, it follows therefore that it is logical to plan a consolidation which shall embrace all these functions.

### Size

Having determined what functions or processes should be included, the next step is to ascertain the desired size of a company comprising all of these functions.

It should be pointed out that the most practical way to approach a merger and to determine the practicability of it is, first, to plan the whole thing out on paper, ascertaining the size of the company which will be most effective and the possible simplification to result from a merger and hence enhancement of profits. We propose to show such a method, the results of which we believe indicate very clearly the desirability of a consolidation. If we show these facts, I will expect as the attorney said during my recent jury duty, a verdict in favor of a merger. The first consideration in determining the size of the proposed company is to ascertain the sales volume which it is practical to handle under one organization. Without going into the research involved, let us say we conclude that this figure is \$100,000,000.

The second consideration pertinent to the question of size is that of manufacturing. Analysis of the silk business discloses the fact that the major function is weaving and that all other operations should be set up in ratio to the predetermined weaving capacity. Research disclosed that \$100,000,000 in sales volume is the output of 30,000 looms, which is the term applied to machines which weave the cloth. We must now calculate the capacity required in each allied process. Having these data on hand, we conclude that it is feasible to manufacture in one organization \$100,000,000 worth of merchandise and direct all of the functions involved.

The third consideration for size is the necessity for leadership in the industry. A review of the industry shows that there are no companies embracing all of these functions and none large enough to serve as leaders. Further study shows that the industry is rife with bad trade practices and that a leader is necessary. Therefore, if the new company is to secure the greatest advantages, it must be large enough to serve as a leader. A \$100,000,000 sales output satisfies this requirement also, since the largest sales volume today under individual management is \$30,000,000.

The final major consideration is in the nature of a restriction relative to law. Since the passage of the Sherman and Clayton Acts, while it is not possible to determine any definite rules in this connection, it is quite safe to say that no merger absorbing more than 50% of the production of the industry is feasible. Some competitors of a fair size must be left outside of the merger. It is well in this connection to investigate the exact legal status before proceeding.

We will now review each process and see what it means. The first consideration is the purchasing division.

### 1. PURCHASING

Importing Division.—Based upon the assumption that the proposed corporation will comprise 30,000 looms, raw material must be purchased in sufficient quantities to conform with the production capacity of the number of looms. With this information in hand, we can determine the volume of business which the division will handle.

Of 30,000 looms, 27,000 may be counted upon to be in shape for constant operation. As each loom averages  $2\frac{1}{2}$  bales of silk per year, the total number of bales required will be 67,500 or 9,000,000 pounds.

In addition to silk, other materials to the extent of 151 pounds per loom or 4,100,000 pounds per year will be required.

In order to verify this calculation we will use an average yardage per standard loom, which is 4,000 yards, and which, multiplied by 27,000 looms, results in 108,000,000 yards. At 12 yards per pound we secure 9,000,000 pounds at \$6.70 average price per pound for raw silk, the result is \$60,300,000. With the cost of other materials at \$10,250,000, we reach a total material cost of \$70,550,000.

A tremendous saving results through the great buying power. Let us for the sake of conservatism ignore this item.

Throwing Division.—The throwing of silk means the making of skeins of raw silk as they come from Japan, etc. into thread for use in weaving. About 40% of the silk used in weaving must be thrown into thread. Based upon our previous figure 3,800,000 pounds, which at average throwing cost of \$1.10 per pound results in a cost for the throwing operation of \$4,000,000.

An estimated saving of 10% can be obtained in throwing cost through confining whole mills to one or a few types of thread and securing volume. This amounts to \$400,000 per year.

Weaving Division.—The third major process is the weaving of silk into threads. It is assumed that the looms will be grouped in single plants of from 400 to 1,000 looms. Based on actual experience we have the following data.

Unit cost for material	.69 = 60 %
Unit cost for labor	.26 = 22½%
Unit cost for overhead	.20 = 17½%
	<u>1.15</u>

The total weaving cost amounts to \$49,680,000.

Converting Division.—This division must be prepared to convert 108,000,000 yards, by printing designs on the piece goods, finishing or plain dyeing.

An average cost for dyeing service at \$.10 per yard results in a charge of \$10,800,000. A conservative saving of \$.10 per yard results in a saving of \$1,080,000 from this source.

### Sales and Administrative

Substantial economies may be affected in this section due to the elimination of duplicating functions. Each separate organization today of 400 or more looms must perform them. So must the proposed organization. The cost of these functions for a 30,000-loom company, while in excess of that of a 400-loom company is far from being in ratio to the greater number of looms. Each small company must have its quota of officers which, based upon the assumption that the proposed corporation will absorb 50 such plants, means 50 sets of officers. The new corporation will have but one set of officers who can be paid far larger salaries than a 400-loom corporation and still permit a big saving. This same thought must be borne in mind in considering all phases of this division.

A comparison of existing cost and estimated future cost under the consolidation is as follows:

Salesmen's Salaries .....	\$2,000,000	\$ 800,000
Traveling Expenses .....	720,000	288,000
Offices and Showrooms ....	1,000,000	550,000
Sales and Promotion .....	4,380,000	2,600,000

It is estimated that the administrative cost of a 400-loom plant averaged \$81,000 or for 50 plants \$4,000,000. The proposed administrative expense will not exceed \$1,000,000 which is twice the conceded cost.

### Factoring

The final item is the elimination of factoring. By factoring we refer to the practice of this trade of borrowing money on work in process, finished stock, and finally through the collection of accounts receivable by specially organized collection agencies known as factors. It is estimated that factoring charges today for 30,000 looms exceed \$2,000,000 per year. This takes into consideration the fact that by using its own money at a cost of 6%, the proposed company would save an average of 20%.

### Savings

Mr. Merrill, Comptroller, Royal Baking Powder Company, Vice President of Remington-Rand, stated recently that the public expects at least one of three things from a merger.

1. A better product
2. Cheaper prices
3. Better service

The research activities of such a company plus manufacturing talent should result in a better product. Today each company is manufacturing an average of 60 products, duplicating many of those of its competitors. Volume and Specialization will improve the product and accomplish miracles from the standpoint of the cost of manufacturing.

Using the data on hand, we ascertain that the savings from our paper merger have been \$8,380,000 in manufacturing, \$6,500,000 in selling, and \$3,000,000 in administrative, or a total of \$18,000,000 as against estimated present profits of \$15,000,000, or 8% on net sales of \$172,000,000.

The next step is to prove these savings by conferences with manufacturers whose companies are to be merged. The first move is to secure the actual balance sheets of the companies. It will be found that the books of these companies will all be kept differently. It is therefore necessary to standardize each manufacturer's figures for manufacturing selling and administration expense so that

they are comparable. The total cost of sales figures of each company is reapportioned as follows:

1. Manufacturing .....	85 %
2. Selling Expense .....	12½%
3. Administrative Expense .....	12½%

Having made the redistribution, the following saving percentages are applied.

1. Manufacturing .....	7%
2. Selling .....	42%
3. Administrative .....	22%

This percentage applied to 13 manufacturers comprising 11,000 looms resulted in an estimated saving of \$545 per loom against those conceded by manufacturers of \$571 per loom. We are therefore substantiated in our estimate of savings. Assuming that we are 50% too high, the result is still worth while.

### Working Capital Requirements

Using the data on hand, we must determine the capital requirements of such a business. The nature of the business is such that a turnover of finished stock six times a year is considered satisfactory. We must therefore figure on a 60-day basis, which per 1,000 looms results as follows:

Raw Material Requirements .....	\$410,000
Throwing Charge .....	22,200
Weaving Labor and Overhead .....	276,000
Converting Cost .....	60,000
Selling Expense .....	100,000
Administrative Expense .....	22,200
	<hr/>
	\$890,400

We have thus a cost of \$890,400 against estimated sales of \$955,000 for 1,000 looms.

### Sales Dollar Plan

Figures which run into the millions obscure careful study. Therefore it is desirable to translate these data into terms of the sales dollar. Under this plan we see that our manufacturing ex-

pense is \$.786, our selling expense \$.10½ and our administrative expense \$.023, leaving a net profit before taxes of .086 or .08 on the dollar. Our savings are .051 for manufacturing, .03½ for selling, .005 for administrative, making a total of .09 cents. This puts the picture in language which is unmistakable.

### Conclusion

Now that I have proved these facts, and the paper merger is a success, it is only necessary to prepare a financing plan, get the options, determine the management, find the right bankers, and see that the bonds sell, after which we will try to earn our first dividend equal to our estimated savings.

CHAIRMAN SANDERS: We are very grateful to Mr. Rowland for the clear presentation he has given us of one procedure, at any rate, for simplifying the organization of business. It will, I think, be clear to everybody, what an important contribution the accounting would be in procedures of that sort. There will, I have no doubt, be questions for Mr. Rowland, but before we put them we will hear about one other subject—tackling the problem of simplifying accounting itself. I will call, therefore, upon Mr. W. J. Merrill, Comptroller of the Royal Baking Powder Company, to speak on “The Simplification of Accounting Organization and Procedure.”

### THE SIMPLIFICATION OF ACCOUNTING ORGANIZATION AND PROCEDURE

W. J. MERRILL

Comptroller, Royal Baking Powder Company, New York

SOMEWHAT contrary to the announcement in the program, I shall not attempt to cover the entire field of simplification of accounting procedure, but shall rather confine my efforts to telling you briefly about the development of this work in our own company.

There are four principal obstacles which we have had to overcome in this work, duplication, inconsistency, delay, and obsolescence. The first three are obvious. As accountants, we are

accustomed to think of obsolescence in connection with plant and equipment, but I doubt if we are as keen to realize that obsolescence is working just as much in accounting systems and in office procedures as it is in physical assets. A simple way to remember these four obstacles is to combine the first letter of each word into the word "dido." Our Chairman is responsible for the statement that that word spells the name of a lady who caused a great deal of trouble in the world, and I am quoting from him because I am not an authority on that subject.

Our Chairman mentioned the necessity for having forward as well as backward records, and it was the installation of a budgetary system of control in our company which started us thinking about simplification in our accounting.

The need for revision was indicated in the various reports emanating from the Accounting Department. I should first like to explain the principal reports as they existed and as we are preparing them today and then pass on to a description of our present accounting system.

Our budget was set up to begin operations in January, 1927. In the process of preparing it, we realized that it was essential to have the budget accounts parallel the book accounts. In trying to correlate the two into a systematic plan, we discovered certain inconsistencies. At that time there were in our statements two groups of accounts which were regarded by the Accounting Department as "orphan accounts." One was "Deductions from Income" and the other was "Other Income." This latter group included Drawback, Cash Discount Earned, Bank Interest and Insurance Scrip. The Drawback Account was clearly a credit against purchases of imported materials, and Cash Discount Received we considered to be a reduction in purchase price rather than an earning, particularly in view of the fact that it was a policy of the company to discount all bills. Bank Interest was clearly an Income aside from actual operations, but since we began with only a Sales and Expense Budget it did not belong in our Operating Budget. Insurance Scrip represented assets to be converted into cash at a later date and was not an income in any sense. Thus, by reclassification of the items into their proper places we eliminated entirely the group of accounts under Other Income and in similar fashion eliminated the group Deductions from Income.

With the beginning of a budgetary system it was necessary to

devise a means of securing the necessary information from which to prepare the monthly Budget Reports to the operating department heads. In the beginning a separate typewritten report was prepared for the Budget Officer by the Accounting Department. The Budget Officer worked the figures over in detail and from them prepared the Budget Reports. Since the budget was in process of installation and the Budget Officer himself was not familiar with the details of the accounts, it was necessary that he do a considerable amount of detail work in the preparation of reports. In the course of this detail work a number of inconsistencies in accounting procedure were brought to light. For example, in adding up the totals for three months a figure was reached which did not agree with the total for the three-months' period according to the accounting reports. On checking back it was discovered that on the work sheets of the Accounting Department there were so-called "period adjustments" which were reflected in the figure at the end of the given period, but not in the figures of any one month. This practice was discontinued immediately, and any adjustments made during a month relating to current operations were reflected in the month's figures so that it was possible to add the figures for several months and get a total figure for the period which we could check. This is merely one example of a number of minor inconsistencies which were corrected in the course of operating the budget.

At the time we began operating a budget our regular monthly report from the Accounting Department consisted of forty-six pages. To this were added eleven pages of budget information so that each month our Accounting Department was turning out fifty-seven pages of figures. One of our officers reminded us good humoredly, that we were in the baking powder business and not in the publishing business. You may make your own guess as to how thoroughly such a large monthly report was read by the executives to whom it should have been helpful. Such a voluminous report necessarily involved a large amount of detail work so that the statement was always issued after the twentieth of the month and, as a consequence, the Budget Reports were almost a month late. We realized that if the Budget Reports were to be really useful to the operating executives they must be issued shortly after the close of the month, and we set out to accomplish the goal of issuing these reports on the tenth day of the month following the

one on which we were reporting. A great many of our people felt that this was an impossible task, but in spite of the obstacles which had to be overcome we were able by the end of the year to attain this goal.

In the meantime we had been working on the problem of simplifying the monthly accounting report. Our first step was to eliminate thirty-seven of the forty-six pages and then to consolidate the budget sheets with the accounting report, making one report of twenty pages instead of two reports of fifty-seven pages. We then decided that it was unnecessary to include the budget sheets with the accounting report inasmuch as these were only working sheets from which the information for the regular Budget Reports was taken. We therefore discontinued typing the eleven budget sheets and now keep this information on working papers in the Accounting Department. The Budget Officer now supplies the Accounting Department with forms and the accumulating and typing of the Budget Reports themselves is done in the Accounting Department. This procedure we consider satisfactory now since we have confidence in our accounting system and greater familiarity with it.

In March of this year our regular accounting report consisted of five pages and in April a sixth page, showing analysis of surplus, was added. In spite of this reduction in size I am confident that our executives are better informed on the operations of the business today than they were a year ago. In revising our accounting reports we also worked out a more logical grouping of the Balance Sheet items.

You may have wondered how it was possible for us to eliminate most of the sheets in our Accounting Report and yet retain the essential information. The answer is that the sheets which we eliminated did not, for the most part, contain essential operating information or else were duplications. For example, we had been making monthly distributions to arrive at a complete Profit and Loss Statement for each product. This naturally required a great deal of time, and we felt that it involved unproductive work because, first, the distributions of expense were arbitrary to a very large degree and, secondly, that this was statistical information which had no place in our accounting records. Upon further investigation it was found that needless distributions were being made in our Cost records and that unit costs were carried to six decimal places.

A number of humorous situations developed out of this detailed distribution of expense. For example, in one month I noticed a charge of 69 cents under an expense classification against one of our products. This, I discovered, represented a proportion of the salary of one of our officers chargeable against that product for that particular month. We could see no useful way to utilize such information, and accordingly decided that we could get along without it.

In addition to the Profit and Loss by products, we were preparing a Profit and Loss by states. The preparation of both these detailed statements involved so many arbitrary distributions of expense that we felt the information was too inaccurate to be relied upon. We have therefore eliminated our Profit and Loss by products and also our Profit and Loss by states so far as our accounting records are concerned. We now carry our products through to Gross Margin and we have confidence in the figures which we get. Any further information of Profit and Loss by products, or by territories, is statistical and does not enter into our accounting records. It should be pointed out that the carrying of arbitrary distributions of expense in the accounting records tends to give a false impression of accuracy.

During the time in which we were working on the simplification of our accounting records and reports there were certain changes in the organization which were involved. First, was the creation of the position of Comptroller. This officer was given the definite responsibility of supervising accounting, budget and statistical records and reports, and of correlating our record keeping and record reporting activities into a systematic plan. Later in the year we created the office of Supervisor of Methods, having in mind that all office operations should be covered by written instructions in order to clarify the functions of the various operating departments, to fix responsibility, to avoid duplication of effort, and to standardize on the most efficient methods of procedure. We have changed the name of the Auditing Department to the Accounting Department and the title of the department head from Auditor to Chief Accountant merely as a matter of making names and titles representative of the functions involved. We have established a central Machine Department which includes tabulating and addressograph equipment, and have placed this under the control of the Supervisor of Methods rather than under the Accounting Department,

because this department is expected to perform billing and statistical as well as accounting work.

Naturally in making changes in the organization it was necessary to add some new personnel. We went about this problem with the idea of getting the best young men available, and, after we had got them, of keeping them fully informed on matters relating to their jobs and of placing definite responsibility upon them for performance.

This process has developed over a period of many months. We have purposely proceeded slowly and have worked on the theory of selling the idea to every one down the line rather than of issuing orders. This method has resulted in a wholehearted spirit of coöperation in the organization, a matter which is absolutely essential in working out changes of this kind. We have had many heated discussions but have always been able to reach a satisfactory conclusion without any friction or resentment. I cannot stress too strongly the necessity for the most complete spirit of coöperation in any plan involving changing from old methods, which have been in practice for many years, to newer methods.

I have attempted to give you the background of our simplification procedure and to indicate certain definite results from the standpoint of our reports. There remains only to be described the accounting system itself. It will be helpful, I believe, to review briefly the accounting structure as it previously existed.

The accounts themselves, while divided into groups corresponding to Balance Sheet classifications, were formerly coded in such a way that the code number gave no indication of the Balance Sheet classification. As new accounts were opened, the next sequential number was assigned without regard to the general nature of the account. As a result, accounts with entirely different numbers would be found together in the ledgers and accounts while numbers close together would be widely separated on the books.

Two ledgers more maintained for general accounting—a so-called Private Ledger and a Profit and Loss Ledger. The Private Ledger was not a Private Ledger in the generally accepted meaning of that term, i.e., there was no control account maintained in any other ledger as a control for the Private Ledger. There were no general control accounts aside from certain expense accounts and factory ledger accounts. In addition to the various ledger accounts were recorded arbitrary prorrations of expense. For example, Sell-

ing Expense was divided between products on the basis of Sales. Without regard to the correctness of this allocation it was believed that such prorations had no place on the general books of the company, that they were rather a statistical analysis which should be used only on reports. During the revision of the general accounting system it was decided to show on the General Ledger only actual expenses incurred and to show any prorations of these expenses on working papers supporting company reports.

To prepare a balance sheet or an operating statement required reference to all the ledgers of the company and various combinations of accounts.

In the various journals were recorded vouchers covering transfers between accounts. From these journals tabulating cards were prepared at the end of each month. In like manner, tabulating cards were prepared covering the voucher register, and the Cash Book. These cards were then sorted on the tabulating machine according to account number and accumulated so that a single debit and a single credit posting was obtained for each account. This resulted in a so-called consolidated posting sheet. While this plan effected considerable economy in the work of posting, the result was that the various transactions of the company were merged in such manner that they could not be identified without recourse to the punched cards.

The tabulating equipment was used additionally for sales statistics and other accounting work. In general, however, its principal field of use was the checking of work which had already been completed. The result was a duplication instead of a saving of labor.

When the revision in accounting was planned, one of the aims was to maintain in a general ledger, containing relatively few accounts, sufficient information for the ready preparation of the Balance Sheet of the company. This ledger was accordingly begun, containing such general accounts as inventories, plant equipment, and reserves for depreciation. This ledger is in itself a complete entity.

Subordinate to this General Ledger is an Assets and Liabilities Ledger and a Profit and Loss Ledger in which are recorded the detailed Assets and Liabilities accounts and operating accounts, which are controlled by the accounts in the General Ledger. Not all of the General Ledger accounts control subordinate ledger

accounts. For example, the account Capital Stock exists only in the General Ledger.

In the rearrangement of accounts incident to this change especial emphasis was placed on the combination or elimination of little-used accounts. For example, separate accounts were carried covering prepaid insurance on the various properties of the company. Corresponding expense accounts were carried in the various ledgers to record insurance expense as the premiums expired. As a measure of simplification the various insurance accounts, covering unexpired premiums, were combined into a single General Ledger account—"Unexpired Insurance." This account controls three subordinate ledger accounts corresponding to three general types of insurance carried. Prior to this revision approximately fifteen accounts were used to record this insurance.

In the codification of accounts code numbers of three different ranks were assigned. The first two digits of the code number were used to indicate the General Ledger control account. The second two digits were used to indicate the control account in the Assets and Liabilities or in the Profit and Loss Ledger. The final digits were used to indicate budget expense and factory ledger accounts. For example, the cost of samples of Royal Baking Powder distributed by the company is charged to Account 71-17-21. The first two digits—71—indicate that the item is chargeable against the General Ledger control account covering Profit and Loss on Royal Baking Powder. The second two digits—17—indicate that the charge is to Selling Expense on Royal Baking Powder, and the final digits—21—indicate that the charge under Selling Expense is to the Budget account covering the cost of samples. Where an identical account is carried under more than one classification an identical subordinate number is assigned. For example, Account 17 covers Selling Expense for any product. The particular product to which the expense is chargeable is indicated by the General Ledger control account.

To replace the consolidated posting sheet it was planned to have the Journal the only posting medium to the ledgers. As a ready means of identification the various transactions of the company were divided into a series of standard monthly Journal entries. For example, Journal entry 1 is used to record cash receipts; Journal entry 5 records purchases from suppliers; Journal entry 16 records depreciation accrued each month.

As Journal vouchers are originated they are forwarded to a checking section which checks the code number of the account and the number of the entry to verify that the transaction is recorded under the proper entry. After these vouchers have been thus checked and approved by the Chief Accountant they are assigned serial numbers and forwarded to the Tabulating Department where tabulating cards are prepared to cover the charges and credits indicated on the vouchers. In addition, at the same time cards covering transactions with suppliers are prepared from voucher checks and, at the close of each month, cards comprising a summary of Cash Book transactions are originated. After the month's transactions have thus been completely recorded on tabulating cards, the cards are sorted according to entry number and under entry number sorted to account number. They are then run through the printing tabulator to show a complete listing of each voucher during the month, together with its identification number, a subtotal for each subordinate ledger account to be charged or credited, and a grand total for each General Ledger account in which transactions have occurred.

As a means of summarization, typed entries showing only General Ledger accounts are prepared. From these entries posting is made to the General Ledger. From the detailed listing, posting is made to the Subordinate Ledgers. A feature of interest in this connection is the fact that through the use of General Ledger accounts the Balance Sheet may be obtained as soon as the cards have been run through the printing tabulator and posted to the General Ledger before postings to the Subordinate Ledgers have been made. It should be noted also that as each card is listed on the sheets prepared by the Tabulating Department the identity of any detailed charge may be determined without reference to the tabulating card itself.

In posting to the ledgers the standard entry number is indicated on the ledger sheet. This provides a ready identification of the general nature of the transaction and is of considerable use for general analysis work. For example, the amount charged to any given account covering purchases from suppliers may be determined by adding the total charges to the account from Journal entry 5.

After the detailed entries have been prepared in the Tabulating Department the cards, comprising the various expenses chargeable

to budget accounts, are sorted out and a listing is made for report purposes of the total charges to each Budget account.

Through the use of tabulating equipment it is possible to obtain the standard entries within a very short time after the closing of the various books of original entry. In most cases the schedule calls for the submission of detailed entries to the Accounting Department within two days after the close of the book of original entry to which the standard monthly Journal entries, prepared from that book, apply. In addition to this work on general accounting the tabulating equipment is used for billing to customers. This application will be described by Mr. Cadmus.

We now have in course of preparation an Accounting Manual explaining our new accounting system and giving the code numbers of the principal classifications. The purpose of this Manual is, first, to inform the organization and, secondly, to provide a means of control since no changes in the system may be made without the written permission of the Comptroller.

In closing I should like to summarize a few conclusions which are definitely in our minds as a result of the process of thinking through which we have been going.

1. Look at accounting from the Executive point of view. Keep in mind constantly the *object* for which records are kept and reports rendered. Unless information is really useful to Executives, one cannot justify the cost of accumulating and reporting it. As a corollary, simplify regular reports to cover only essential information.
2. The time factor is extremely important. Reports lose their value if delayed, therefore, it is essential that minor difficulties be swept aside so that reports may be issued promptly.
3. In considering accounting revision, the coöperation of the organization is essential. This requires a sympathetic attitude on the part of Executives and subordinates. Obviously, the organization to plan and carry out the work must be capable of doing the job.
4. There should be a reason back of any change. Therefore, it seems advisable to make changes by selling the idea rather than by issuing orders. These methods take more

time in the beginning but save time and trouble in the end.

5. Make the nomenclature of accounts consistent throughout the system, and as descriptive as possible. Eliminate obsolete accounts and simplify by combining relatively unimportant accounts of similar character.
6. Keep in mind the division between accounting and statistics so far as the accounting records are concerned.
7. Employ labor-saving devices where practicable, making sure, however, that the result will be a saving and not a duplication of labor.
8. Carry a sense of humor—it will save many a difficult situation and will make the job much more interesting.
9. Reduce your plan to writing in the form of a manual of accounts and provide that any changes must be approved by the executive in charge of the work. This will eliminate misunderstanding and will serve as a basis for securing control.

CHAIRMAN SANDERS: Mr. Merrill has given an excellent presentation of a very thoroughgoing accounting revision. We will go ahead with the succeeding papers before we have questions on these subjects. Some of you may have the impression, from certain similarities between these papers, that there has been collusion in the preparation of them, but Mr. Sweetser assures me that there is no connection between baking powder and trousers. It is very natural that papers presented on the same subject should be somewhat similar. There would be something the matter with them if they weren't.

One of the secrets of Mr. Sweetser's success has been the efficacy with which he selects people for his organization; and you will agree with what I say when you hear one of them here today. I believe, Mr. President, we have not frequently made the experiment of inviting ladies to the National platform, but we are going to make that experiment today. May I call upon Mrs. E. E. Woolston, Dutchess Manufacturing Company, of Poughkeepsie, N. Y., to speak on "The Use of Tabulating Equipment?"

SIMPLIFIED METHOD OF ACCOUNTING BY USE OF  
TABULATING MACHINE EQUIPMENT

MRS. E. E. WOOLSTON

Dutchess Mfg. Company, Poughkeepsie, N. Y.

THE use of tabulating machines in accounting assures accuracy, simplicity, and speed. It minimizes the use of skilled specialists and makes the accounting mechanical and dependable.

As transactions occur, vouchers are issued in one of four forms shown which vouchers carry numbers corresponding to the account classifications. Cards are punched for these vouchers. These punched cards are therefore the Accounts Payable Record, Voucher Record, or whatever it may be called. In our case it is known as the Voucher Distribution Record. In addition to the foregoing, known as Class A cards, all other accounting transactions are covered by Class B & D cards. At intervals corresponding to the accounting practice, the cards are sorted and tabulated so that the results or balances of the various accounts may be recorded and summarized for posting to the General Ledger controlling accounts.

The key to the entire accounting system is the Chart of Accounts which gives the number or classification of each account. In this chart we use the Dewey decimal system, which has certain digits reserved for the *controlling accounts*, others to indicate the *natural division of expense* or *name of the account*, and still other digits for the *department* where the charge or credit originated.

Thus, for example, the number 94131.11 might be punched on a card and this would indicate controlling account 94, natural division 131, and department .11 where the charge occurred. Reading from the left, the first two digits indicate the General Ledger Control; any other digits before the decimal point (.) indicate the Natural Divisions of Expense, and the digits after the decimal point refer to the Department.

The cards can therefore be sorted and tabulated in three ways by our system:

1. General Ledger Control
2. Natural Division of Expense
3. Expense in the Departments

AMERICAN WOOLEN CO.

Of New York

Sold to: Dutchess Mfg. Co.  
Poughkeepsie, N. Y.

Feb. 3, 1928  
Order No. 2200

Terms: 7/4 8/60 8 1/2/30 10/10

STYLE	COLOR	PIECES	YARDS	PRICE	TOTAL
8055	36	2	100	.45	\$450.00

REC'D FEB 4 1928

PURCHASE ORDER NO.	1432	VENDOR NO.	9002	VOUCHER NO.	2-413
DATE RECEIVED	215	CLASS		AMOUNT	450.00
Quant Price Terms O.K.	9236.03				1 50
EXT. ADD O. K.		ADVANCE DECREASE			451.50
DATE PAID					

EXHIBIT 1. INVOICE FROM VENDOR. Stamped with "Invoice Stamp," showing date of receipt. Entries made by various departments. "Class" entry taken from our Chart of Accounts as explained in the foregoing and O.K'd. by Accounting Department. Then sent to Tabulating Department to have cards made.

DUTCHESS MANUFACTURING CO.,  
Poughkeepsie, N. Y. Feb. 3 1928 Mr. G. Riley

## CREDIT VOUCHER

*Exp. for work ending Jan. 28 24* 34 15  
(Convention Exp. Jan.)

Vendor: 8 Voucher: 2-413	
Class: 9506.072 Amount: 34.15	
Date Paid: 3/3/28 Approved: J. B. B.	

Form 43.12

EXHIBIT 2. INTERDEPARTMENTAL CREDIT VOUCHER. Used for all accounts (including Cash) to which a credit is due. Same procedure follows as for "Invoice from Vendor."

Dutches Manufacturing Co. Poughkeepsie, N. Y. Feb 3 1928		Pulley Express	
Vendor 9862	Vendor 2-415		
Class 2682	Amount 17.05		
From Inv. of	Price Quant. Est. O. E		
Shipped by Via		We have charged your account as follows:	
Case	Quant.	No.	Description
	122		Paper boxes damaged in transit Jan. 4th
			17 05
Standard.....			
Actual.....			
Form 6519C			

The cards are tabulated periodically:

First, for posting to General Ledger Accounts (Exhibit 15).

Second, for Expense by Departments (Exhibit 16).

Third, for Natural Division of Expense (Exhibit 17).

The various vouchers and forms which are used as original entry records and summaries for posting purposes, etc., are the usual form of vouchers for these purposes.

Perhaps the most interesting point that can be brought out in this session is the fact that any concern, no matter how small or

ROUTE SLIP FOR VOUCHERS			
VOUCHER NOS. <u>2-413</u>		THROUGH <u>2-416</u>	
DEPT.	INITIALS	DATE	Hour
Purchase	<i>F. C.</i>	<i>2/4/28</i>	<i>9.0</i>
Calculate	<i>M. M.</i>	<i>2/4/28</i>	<i>9.4</i>
Statistical	<i>F. M.</i>	<i>2/5/28</i>	<i>10.1</i>
Punch	<i>A. S.</i>	<i>2/5/28</i>	<i>10.7</i>
Tabulate	<i>A. R.</i>	<i>2/5/28</i>	<i>2.5</i>
File	<i>L. L.</i>	<i>2/5/28</i>	<i>3.0</i>

Form 43.22

**EXHIBIT 5. ROUTE SLIP FOR VOUCHERS.** All Vouchers (after having been passed upon by the Purchasing Department) carry through the organization by means of above route slip. This route slip indicates the voucher numbers, and each department through which these pass must check to see that the number of the voucher agrees with the number given on the slip, thus avoiding any loss of vouchers.

## ACCOUNTS PAYABLE REGISTER

Form 44.26

DATE FEB. 4, 1928

	VENDOR NO.	VOUCHER NO.	AMOUNT	DATE PAID	MEMO
	9002	413	451.50		
	8	414	34.15		
	9852	415	17.05		
	9510	416	36.00		
			36.00		
	85201	243	521.65		
	9852	415	53.05		
			ENTERED & CHECKED per M. M.		

EXHIBIT 6. ACCOUNTS PAYABLE REGISTER SHEET. Each bunch of vouchers are listed on above sheet on adding machine and net total given. Sheets are then sent to the Accounting Department.

Form 51.42	0 To Punch		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 9		0 1 2 3 4 5 6 7 8 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DAILY VOUCHER CHECK			
DEBITS		CREDITS	
VOUCHER No.	AMOUNT	VOUCHER No.	AMOUNT
413	451.50	415	17.05
414	34.15	416	36.00
416	36.00		
	521.65		53.05
ENTERED & CHECKED per <u>M. M.</u>			

EXHIBIT 8. DAILY VOUCHER CHECK. Cards for each bunch of vouchers listed on this sheet and net amount checked and proved with Accounts Payable Register Sheet. Cards are then filed until end of month for tabulation for accounting analysis.

ACCOUNTS PAYABLE BALANCE SUMMARY			
MONTH OF <u>FEB.</u>			
DEBITS		CREDITS	
ACCT. No.	AMOUNT	ACCT. No.	AMOUNT
21	486.00	20	36.00
61	53.05	26	17.05
92	1.50	61	521.65
95	34.15		
	574.70		574.70

EXHIBIT 9. ACCOUNTS PAYABLE BALANCE SUMMARY. Immediately all vouchers have been put through for the month, a tabulation is made by account, and grand total taken, which is checked and proved with Summary taken off of Accounts Payable Register Sheets for the month.

how large, may avail itself of the advantages of the plan which is being presented. Heretofore, the general impression has prevailed that only those concerns, who are large enough to have a complete installation of tabulating machines, might avail themselves of the advantages. Please note these three points:

1. Any concern that has an installation of tabulating machines may readily adapt its accounting to this method.
2. Concerns that have thought the outlay too much or the methods too elaborate may now install the new tabulating service specially designed for small users at an outlay of about one-third or less the former cost.
3. Those concerns that are too small for either of the above may arrange for tabulating service by which the cards can either be punched by themselves, or by the use of the dual card punched by the Service Company from figures placed on the cards, and secure the tabulations in precisely the same form as the larger concerns.

### VOUCHER DISTRIBUTION RECORD

MONTH FEB. '28, NET AMT. 34.15, To DATE 460.28

GLC	NDE	DEPT.	DEBITS	DATE	VOUCHER	VENDOR	AMOUNT
95	06	072		2-3-28	2-414	8	34.15

CREDITS

EXHIBIT 10. VOUCHER DISTRIBUTION RECORD. After Accounts Payable Balance Summary has been proved, cards are then sorted by classification of accounts (General Ledger Control—Natural Division of Expense—Department) and listed on above record—only one G. L. C. for each N. D. E. for each Department to a sheet. The "Net Amount" and "To date" figures are computed by the Calculating Department. These sheets comprise our entire Accounts Payable Distribution record and are carefully filed by class in vertical file folders—one folder for each class.

Therefore, there seems to be no argument against the universal application of this idea.

CHAIRMAN SANDERS: You will have admired the grasp which Mrs. Woolston has shown of the processes which she has described to us, and this will probably not be the last time on which we will have a lady in the National program. We all recognize the importance of mechanical equipment as an aid in reducing the work and in helping to get the work done in our accounting

PUNCH CLASS & REQ. NO.		DATE		FOR EACH ARTICLE		VAR. (BLACK)		VAR. (RED)		APPROVED BY: <i>CP</i>		CLASS		DELIVER TO: <i>Dept 4</i>		TOT. AMT. MTRCL. [ACTUAL]		CRED. TO	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	93	Needles																	
2	2629	—	200																
3	4	4	2.90	1.45															
4	2629	VAR.																	

PUNCH CLASS & REQ. NO.		DATE		FOR EACH ARTICLE		VAR. (BLACK)		VAR. (RED)		APPROVED BY: <i>CL</i>		CLASS		DELIVER TO: <i>Dept 9</i>		TOT. AMT. MTRCL. [ACTUAL]		CRED. TO	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	27	Monogram																	
2	2241	24-4	2																
3	9	4.00	2.00																
4	2241	VAR. 10	VAR. 05																

EXHIBIT 11. "REQUISITIONS FROM STORES" TABULATING CARD (CLASS B & D). A dual card is made out for each and every item taken from stores. Each day's requisitions leave Stores Department with route slip attached. After requisitions have been priced and classified by Purchasing Department, computed by Calculating Department, and cards punched and tabulated for daily check (see amounts on bottom of route slip), cards are then filed away for accounting analysis until the end of the month.

NOTE. All items taken from stores are covered by this card.

departments. We have, therefore, one other example of this sort of thing by Mr. Bradford Cadmus, Supervisor of Methods, Royal Baking Powder Company, "An Application of Tabulating Equipment for Sales Records and Billing." This is said to be the first commercial installation of its kind in the country. I am always a little bit hesitant to make statements of that sort, because somebody is bound to object; but perhaps it is true if he says it is the first of its kind and makes its kind sufficiently limited. Mr. Bradford Cadmus, therefore, will speak to us on this very interesting and timely subject. (See page 138.)

ROUTE SLIP			
REQUISITIONS FROM STORES			
DEPT.	INITIALS	DATE	HOURL
Stores	<i>R. D.</i>	<i>2/5/28</i>	<i>8.0</i>
Purchase	<i>H. D.</i>	<i>2/5/28</i>	<i>11.5</i>
Calculate	<i>H. M.</i>	<i>2/5/28</i>	<i>2.0</i>
Punch	<i>M. L.</i>	<i>2/5/28</i>	<i>4.1</i>
Tabulate	<i>G. D.</i>	<i>2/5/28</i>	<i>4.5</i>

AMOUNT OF REQUISITIONS			
Calculate	\$ <u>7.00</u>	Tabulate	\$ <u>7.00</u>

Form 41.74

EXHIBIT 12. ROUTE SLIP FOR REQUISITIONS. This carries each bunch of requisition cards for the day, as explained under Exhibit 11. These slips are then filed for reference.

MOVEMENT OF INVENTORY					
MONTH OF <u>FEB.</u>					
CLASS	STANDARD	ACTUAL	VARIATION (NET)	VARIATION (BLACK)	VARIATION (RED)
2241	4.00	4.10	.10 *		.10 *

\* Both are red entries.

EXHIBIT 13. MOVEMENT OF INVENTORY. Immediately all "Requisitions from Stores" cards are punched for the month (Class D cards), a tabulation is made giving the Class, Actual Amount, Variation Black (gain) and Variation Red (loss). Calculating Department figures Variation Net and Standard Amount (difference between Variation Net and Actual Amount) and sends complete tabulation to Accounting Department.

Up to and including Accounts Payable Distribution Record, all records have been made from what are known as Class A cards. From this point on, we have what are known as the Class B and Class D cards. The "Requisition from Stores" card is punched for all Class D (which is our Movement of Inventory) and also for a certain part of our Class B—Indirect Supplies. All other items included in Class B are as follows:

#### FIXED

Executive Salaries  
Depreciation  
Interest on Investment  
Taxes  
Swatch Account  
Deductions  
Fire Insurance

#### FLUCTUATING

Compensation Insurance  
Commission to Salesmen  
Interest Receivable  
Interest Payable  
Loss on Rejected Product  
Indirect Supplies  
Labor

These Class B items are punched on the same card as our Class A, excepting there is no Voucher and Vendor and they are signaled under column 2 on tabulating cards as Class B. These cards act as a journal entry—debiting one account and crediting another. All information on Class B (excepting the Indirect Supplies) is taken from source data which consist of schedules for fixed charges and statistical data computed by Calculating Department for the fluctuating charges.

GENERAL LEDGER CONTROL POSTING			
MONTH OF <u>FEB., 1928</u>			
DEBITS		CREDITS	
ACCT. No.	AMOUNT	ACCT. No.	AMOUNT
10	226,695.87	10	235,763.69
14	101,543.26	14	104,201.42
15	4,006.47	15	3,621.83
16	143.33	16	2,254.00
17	11,198.82	17	953.38
18	160.80	19	49,290.67
19	22,169.28	20	16,551.35
20	80,724.66	43	247.00
43	308.89	47	612.04
48	147.00	48	889.97
50	471.35	50	184.30
51	672.64	51	139.83
52	909.38	52	567.08
53	56.49	53	543.84
54	2,132.20	54	2,132.20
55	5,873.48	55	561.74
61	945,578.93	61	910,187.55
62	50,000.00	62	75,000.00
63	69,169.66	63	69,169.66
91	607.04	65	7,179.52
94	60,188.34	66	39.96
97	3,002.31	91	3,810.32
		94	1,605.94
		97	100,252.91
	1,585,760.20		1,585,760.20

EXHIBIT 15. GENERAL LEDGER CONTROL POSTING. After all records have been taken from Class A cards and after all Class B cards have been punched, Class A and B cards are combined and tabulated on this sheet—amount for each account—Debits and Credits—which of course should balance, as each card is a debit to one account and credit to another. This tabulation is then sent to the Accounting Department and after the figures have been entered in the General Ledger, this sheet together with Accounts Payable Register sheets for the month and the Summary sheet of Accounts Payable Register sheets are then filed in booklet headed:

“Accounts Payable Register  
and  
General Ledger Control Posting  
Month of \_\_\_\_\_”

DEPARTMENTAL CONTROL			
DEBITS			
MONTH OF <u>FEB.</u>			
DEPT.	G. L. C.	N. D. E.	AMOUNT
2	93	04	32.31
2	93	05	2.50
2	93	132	165.89
2	93	133	4.40
2	93	134	41.27
2	93	26	81.86
2	93	33	5.05
2	93	3502	15.45
2	93	4913	46.80
			395.53
2	94	11	112.50
2	94	131	354.27
2	94	3501	.20
2	94	447	38.88
2	94	4912	26.49
			532.34

EXHIBIT 16. DEPARTMENTAL CONTROL. After "General Ledger Posting" has been tabulated and balanced, cards for General Ledger Control 92, 93, 94, 95 and 96 (our Expense accounts) are then tabulated, giving amount for each department, for each G. L. C., for each N. D. E., and a grand total of all departments (Debits and Credits of course separate). This tabulation is then sent to the Accounting Department to have figures entered on Comparative Departmental Report sheets.

NATURAL DIVISION EXPENSE CONTROL	
DEBITS	
MONTH OF <u>FEB.</u>	
NAT. DIV. EXP.	AMOUNT
11	11,088.34
13	12,808.14
131	3,886.98
132	491.87
133	383.28
134	410.14
135	121.14
136	263.55
1411	1,648.37
1412	3,526.70
1413	592.86
142	400.00
	35,621.37

EXHIBIT 17. NATURAL DIVISION EXPENSE CONTROL. After Departmental Control tabulation has been completed, these same cards (Expense accounts) are then sorted by the Natural Division of Expense and tabulated, giving amount for each N. D. E., sub-total of each grouping of N. D. D. (1st digit) which signifies "Miscellaneous," "Salaries & Wages," etc., and grand total of all N. D. E. (Debits and Credits separate). This tabulation is then sent to the Accounting Department to have figures entered on Schedule K statement.

## COMPARATIVE DEPARTMENTAL REPORT

DEPT. KNICKER ASSEMBLY No. 2

FLUCTUATING ITEMS	CLASS No.	% Of Stand. Dir. Lab.	MONTH OF FEB. 1928			MONTHS TO DATE		
			Budget 100.0	Actual	Index No.	Budget 100.0	Actual	Index No.
Miscellaneous .....	93	00						
Repairs—Equipment .....		03		32.31			3.79	
Loss on Rejects .....		04		2.30			191.48	
Royalties .....		05					* 25.43	
Miscellaneous Indirect Labor ..		130		165.49			748.20	
Retainer .....		132		4.40			15.67	
Overtime Excess .....		133		41.27			244.51	
Repairs—Product Labor .....		134						
Experimental & Design .....		135		81.86			368.79	
Supplies .....		25		5.05			26.53	
Gas .....		33		15.45			41.98	
Compensation Insurance .....		3502		46.80			269.97	
Interest—Inventories .....		4913						
REDISTRIBUTED FROM:								
Power & Light .....		Less X		82.76			536.03	
Machinist Repairs .....		9021		56.80			431.04	
Carpenter .....		9023		.51			12.69	
TOTAL ACTUAL FLUCTUATING ..	15			535.60			2,865.25	
TOTAL STANDARD FLUCTUATING				417.81			2,745.57	
FLUCTUATING VARIATION .....				* 117.79			* 119.68	
FIXED CHARGES	94							
Executive .....		11		112.50			675.00	
Supervision .....		131		334.27			2,169.16	
Fire Insurance .....		3501		.20			1.39	
Depreciation .....		447		38.88			241.92	
Interest—Equipment .....		4912		26.49			164.82	

EXHIBIT 18 (See p. 136 for caption)

## COMPARATIVE DEPARTMENTAL REPORT (Continued)

	CLASS NO.	% Of Stand. Dir. Lab.	MONTH OF FEB. 1928		MONTHS TO DATE	
			Budget 100.0	Actual	Index No.	Index No.
REDISTRIBUTED FROM:						
General Burden .....	Less X					
Training .....	90					
Heat .....	900					
Floor Space .....	90212					
Industrial Relations .....	906					
	900					
TOTAL ACTUAL FIXED .....						
FIXED VARIATION .....						
TOTAL STANDARD FIXED .....						
FIXED ABSORBED .....						
IDLE CAPACITY .....						
	25					
TOTAL VARIATION .....						
TOTAL ACTUAL BURDEN .....						
RATIO OF BURDEN .....						
To Standard D. L. ....						
	40					
DIRECT LABOR .....						
Less X .....						
Actual .....						
Standard .....						
Variation .....						
PRODUCTION .....						
Actual .....						
Schedule .....						
Variation .....						

\* Consider as red entries—loss.

## COMPARATIVE DEPARTMENTAL REPORT (Continued)

DEPT. MANUFACTURING OFFICE No. 012

	CLASS NO.	% Of Stand. Dir. Lab.	MONTH OF FEB. 1928			MONTHS TO DATE		
			Budget 100.0	Actual	Index No.	Budget 100.0	Actual	Index No.
Miscellaneous Expense .....	0			3.00			8.50	
Repairs to Equipment .....	03						10.20	
Executive .....	11			200.00			950.00	
Indirect Labor .....	130			293.66			2,397.64	
Supplies .....	25-6			252.13			878.45	
Fire Insurance .....	3501			1.16			1.08	
Compensation Insurance .....	3502			1.38			4.57	
Depreciation .....	447			42.50			255.00	
Interest—Equipment .....	4912			9.94			50.64	
Power & Light .....	90211			9.00			32.83	
Heat .....	90212			11.77			11.77	
Floor Space .....	906			81.54			520.47	
Industrial Relations .....	909			19.93			70.42	
Machinist .....	9022							
Electrician & Carpenter .....	9023							
Total .....				925.01			5,200.57	
Redistributed to General Burden .....	90							

EXHIBIT 18. COMPARATIVE DEPARTMENTAL REPORT. Figures from "Departmental Control" tabulation are entered on these sheets, one sheet for each department. All entries for both productive and non-productive departments are made direct from tabulation, with exception of redistributed items, which figures are arrived at by a process of redistributing the service departments through the productive and non-productive departments on a percentage basis.

All "Comparative Departmental Report" sheets are made in duplicate; original is sent to Management to be put in binder containing all other financial statements for the month; duplicate is retained in Accounting Department and put in binder with previous months' reports.

## TOTAL EXPENSES BY NATURAL DIVISION

Schedule K

(1)

FOR FEB. 1928 DIRECT MATERIALS AND DIRECT LABOR EXCLUDED Months to Date

	BUDGET	TOTAL ACTUAL IND.	BUDGET	TOTAL ACTUAL IND.
<b>NET GRAND TOTAL</b>		55,099.88		307,874.69
<b>8 GAINS CR. TO EXPENSES</b>		* 1,037		* 4,869
80 Miscellaneous .....		* 0		
81 Cafeteria Rec. ....		* 211		* 457
82 Purchase Disc't. ....		* 287		* 1,032
83 Rents .....		* 15		* 331
84 Waste Material .....		* 486		* 2,998
85 On Materials Sold .....		* 38		* 51
Sub-Total .....		56,156		312,544
<b>0 MISCELLANEOUS</b>		2,074		13,704
00 Sundry .....		580		2,099
01 Entertainment .....		0		18
02 Relief .....		84		340
03 Repairs to Equip. ....		59		3,302
04 Loss on Rejects .....		156		1,006
05 Royalties .....		120		385
06 Conventions .....		0		585
07 Publicity .....		1,084		5,861
08 Direct Mail Adv. ....		4		190
09 Close up Stores .....		* 13		* 82
<b>1 SALARIES &amp; WAGES</b>		35,621		198,774
11 Executive .....		11,088		54,768
13 Total Indirect .....		18,365		85,171
130 Miscellaneous .....		12,808		56,469
131 Operation Supervision ..		3,887		20,893
132 Retainers .....		492		3,332
133 Overtime Excess .....		383		825
134 Repairs to Product .....		410		1,888
135 Experimental .....		121		835
136 Branch Office .....		264		929
14 Salesmen Total .....		6,168		58,835
141 Commissions .....		5,768		56,435
142 Excess .....		400		2,400

\* Consider as red entries—loss.

EXHIBIT 19. TOTAL EXPENSES BY NATURAL DIVISION (SCHEDULE K). Figures from "Natural Division Expense Control" are entered direct from tabulation to this statement. The "To date" figure is gotten by adding previous months' figures to current month. When complete, statement is sent to Management to be put in binder containing all other financial statements for the month.

Mr. Cadmus then presented his paper.

## AN APPLICATION OF TABULATING EQUIPMENT TO DIRECT BILLING

BRADFORD CADMUS

Supervisor of Methods, Royal Baking Powder Company, New York

**M**R. MERRILL has described in his talk one application of the installation of tabulating equipment in the Royal Baking Powder Company. As he mentioned, another use of this equipment is to provide for the preparation of billing rendered by the company to its customers. Prior to a description of this application it is of interest to summarize some of the general problems involved.

The Royal Baking Powder Company handles a line of products comprising Royal Baking Powder, Royal Fruit Flavored Gelatin, Cleveland Baking Powder, Dr. Price's Baking Powder, Royal Mint Sauce, and Royal Plain Gelatin. These products are sold to jobbers at standard list prices, subject to a trade discount. Only two different discounts are allowed. The products themselves are available in a limited number of container sizes and shipping units. All shipments to customers, for which billing is rendered, are made in these standard shipping units.

Under the plan which was followed before the application of tabulating equipment, billing to customers was prepared by typists on fanfold billing machines. As these machines were not equipped with any computing or tabulating device it was therefore necessary, in the preparation of the invoice, to calculate extensions and enter them to the order. After the invoice had been typed a further check was required to insure correctness of typing and calculation. The disadvantages of this plan are obvious. The advance calculation required considerable time and was of course subject to error. In order to guard against invoices prepared in error being sent to our customers it was necessary to make several checks of extensions and calculations.

After shipment had been made to the customer, tabulating cards were prepared from the invoice as a medium for sales statistics. From these cards were prepared monthly reports showing sales made by each of the company's salesmen and sales of each of the company's products to individual customers. Because of the prac-



the traffic department for a notation of routing and thence to the addressograph file. From this file is withdrawn the plate bearing the customer's name and address. An impression of this plate is shown at the top of the sample form labeled Exhibit 3. In the lower right corner of the plate are numerical designations indicating sales district number, state code number, county code number, customer's code number, and class of customer. The plate is then impressed upon four copies of the invoice—an original and three carbon copies—which are routed to a clerk at the tub files containing the cards previously described. Here are withdrawn from files, cards covering the various items designated on the order and also space, stop, and total cards. The order, invoice, and cards are then delivered to the key punch operator who punches the numerical designations shown on the addressograph plate and code designations showing salesman and class of sale in the last eight columns of the card. The completed card is shown as Exhibit 2.

Printed In U. S. A.		DESCRIPTION OF MERCHANDISE		Size	No. of 2 Cases	No. of 2 Dozen	Price	Extension	Kind	Size	Quantity	Jobber or Customer	1 Om
0	0	0	0	0	0	0	0	0	0	0	0	0	0
1	1	1	1	1	1	1	1	1	1	1	1	1	1
2	2	2	2	2	2	2	2	2	2	2	2	2	2
3	3	3	3	3	3	3	3	3	3	3	3	3	3
4	4	4	4	4	4	4	4	4	4	4	4	4	4
5	5	5	5	5	5	5	5	5	5	5	5	5	5
6	6	6	6	6	6	6	6	6	6	6	6	6	6
7	7	7	7	7	7	7	7	7	7	7	7	7	7
8	8	8	8	8	8	8	8	8	8	8	8	8	8
9	9	9	9	9	9	9	9	9	9	9	9	9	9

EXHIBIT 2

After this punching the cards are placed by the key punch operator face up in one stack and the invoices and orders face down in separate stacks. When a sufficient quantity has been prepared, enough for from 25 to 50 invoices, the cards are placed in the printing tabulator. The invoices are then printed and totaled by the machine. The stop cards bring the machine to a stop as each invoice is completed so that the next invoice may be inserted. The completed invoice is shown as Exhibit 3. The invoice, order, and tabulating cards are then forwarded to the checker. The checker makes a sufficient check of the address to make sure that the cor-

rect addressograph plate has been used. He then checks the quantities shown on the invoice with the original order to make sure that proper tabulating cards have been withdrawn, and checks the punching in the last eight columns with the numerical designations on the addressograph plate.

It will be noted that no check of extension is required as this has been done at the time that the cards were originally prepared. Neither is it necessary to check the addition of the invoice because the addition has been made and the total printed by the printing tabulator. After checking has been completed, two copies of the invoice are forwarded to the factory as a basis for shipment. The original order, the original invoice, and the tabulating cards are filed in a suspense file pending return of one of the factory copies with notation of shipment. On receipt of this copy the original invoice is withdrawn, dated, and mailed to the customer. The original order is sent to permanent file and the tabulating cards combined as a summary of shipments. These cards are sorted to show kinds of material and from them an analysis is prepared on the printing tabulator showing the quantity and value of each kind and size of material shipped during the previous day. The quantity shown on the analysis is available as a check against daily report from the factory shipping department. The value is summarized at the end of the month as the basis for the standard monthly Journal entry recording sales. At the close of each week, cards comprising shipments during the week are sorted by the machines to sales district and tabulated to show sales of each product in each district to each class of customer during the week. The preparation of this analysis, which is completed in the early part of the following week, gives the sales department up-to-the-minute records of current sales conditions. At the close of each month all tabulating cards covering the month's shipments are sorted to salesmen and tabulated to show sales by each salesman of each of the company's products. The cards are then sorted and tabulated to provide a monthly record of the sales of each product to each customer. This information is posted by the sales department to individual customer's record cards.

The plan described has been in operation in the company for some four months. As was stated above, under the previous plan, tabulating cards to be used in the preparation of sales statistics were prepared after bills had been typed on billing machines. The

No 53471

ROYAL BAKING POWDER CO.

100 EAST 42ND STREET

NEW YORK

SOLD TO

Wholesale Grocery Co.,  
Chicago,  
Ill.

SHIPPED TO

101016  
250105

DATE

TERMS

30 DAYS NET  
2% CASH DISCOUNT FOR  
PAYMENT WITHIN 10 DAYS  
OF DATE OF INVOICE.

TRADE DISCOUNT

10%

(DEDUCTED FROM EXTENSION)

COMMODITY	SIZE	NUMBER OF CANS	NUMBER OF DOZEN	PRICE PER DOZEN	EXTENSION (FROM WHICH DISCOUNT HAS BEEN DEDUCTED)
ROYAL BAK POWDER	6 OZ	10	30	3 00	81 00
ROYAL BAK POWDER	12 OZ	25	50	6 00	270 00
DR PRICES BAK PDR	12 OZ	15	30	3 00	81 00
DR PRICES BAK PDR	5 LB	5	2 1/2	16 00	36 00
TOTAL		55	112 1/2		468 00

EXHIBIT 3

new plan merely transferred the work of preparation so that the cards were prepared before billing rather than after billing. As a result, when the change was made the only addition required in the personnel of the tabulating department was a checker. At the same time it was found possible to eliminate the clerks employed in the billing department for typing and checking.

In operation the plan has been satisfactory. Billing and reports are prepared more expeditiously than under the previous plan and work of analysis of shipments and checking with factory shipping reports has been simplified. But one minor difficulty has arisen, due to the fact that no separate printing is made on the invoice by the tabulator to show trade discount. A small number of customers have deducted the trade discount from the total shown on the invoice. These errors were readily adjusted, however.

While the plan has been successful in its application at the Royal Baking Powder Company it is not a plan which may be applied indiscriminately to every line of business. The requisites for its successful operation may be summarized as follows:

1. The number of tabulating cards to be prepared, covering the different items offered for sale, must not be too great, that is, there must be either a small range of items or a small range of shipping units.
2. Shipment must be made in standard shipping units.
3. The discounts offered to customers must be relatively few in number.

It will be seen that if the plan were applied to a business carrying a large number of items offered for sale to its customers at varying discounts, the number of cards prepared in advance would of necessity be so great as to render easy operation impracticable.

In the preparation of our plans for this work as in the revision of the accounting structure described by Mr. Merrill, employees and heads of the various departments concerned were consulted and offered valuable suggestions which facilitated the change. Without their coöperation it is doubtful whether the plan would have worked out as advantageously as it has.

CHAIRMAN SANDERS: We are very grateful to Mr. Cadmus for this presentation of a particular application of mechanical equipment. We have now traversed our subject of the simplifica-

tion of industrial accounting from one end to the other, dealing first with the simplification of organization in an individual business, then with the simplification of a business by combination with other companies in allied industries; we have dealt with the simplification of an accounting system of an entire organization, and we have proceeded to study one or two applications of tabulating equipment as representing that great group of mechanical equipment which we have outside there. (Indicating exhibits.)

There are bound to be many questions on these matters. I now invite questions from the floor. Will you please clearly state your own name and town, and designate the speaker to whom your questions are addressed. We have time available for any questions on any subject you would like to discuss.

MR. C. F. RITTENHOUSE, *Charles F. Rittenhouse & Co., Boston*: I should like to ask Mr. Merrill, under the present scheme, what the position of the budget officer is.

MR. MERRILL: At the time we began this work, the job of budget officer had just been created. Under the present scheme, the budget officer reports to the comptroller.

MR. STEWARD, *Philadelphia*: I should like to ask Mr. Cadmus, what do you do in case an order is sent out for shipment and you don't have the stock, where you make part shipment and back order?

MR. CADMUS: In our particular line of business, that is a situation which we don't encounter. The stocks we carry are ample. As I explained, we have a relatively small number of items and always have ample supplies to fill any orders.

MR. CHARLES A. SACRA, *Black & Decker Mfg. Co., Towson, Md.*: I would like to ask Mr. Merrill a question on the income matter. He said that they did not use trade discount, as other income, but made a deduction from material cost. In using standard costs running over various lines of articles such as we have, perhaps seven thousand items in the storeroom, it would be a rather difficult job to apply discount as a deduction from material cost so that the cost variance on your material would be correct.

MR. MERRILL: That subject came up at the very beginning of our simplification procedure, and we did not consider it was other income because it was a policy of the company to take every discount which was offered. If we wanted to show any information on discounts at all in view of our policy, we might have shown a record of discounts which were not taken, but we satisfied ourselves that all discounts were taken, and therefore we felt that it was a needless record. That applied to our general accounting. I don't know just how you would work it into your standard accounting practice, but, as a matter of theory in our case, I have tried to explain just what we had thought about it rather than to take an issue. In our case, we felt that it was not other income.

MR. SACRA: I asked the question because, in our line, we have probably in our stores 7,000 various items. When we take a discount, it would be almost impossible, or, that is, the task would be very large indeed, if we tried to take that as a deduction from that material itself, because we used a standard material cost and we must show a true cost variance in our material accounting.

Mr. MERRILL: I think you have a somewhat different problem than ours, and your raising the question illustrates one more point, viz., that you must apply to your own specific situation a procedure which fits it. Taking the discounts from the cost of materials wouldn't fit your situation, but it did fit ours. I think in our case there is justification for doing it.

MR. SWEETSER: May I make a statement regarding that particular point? We have a good many items in our line, and we deduct discounts from material and find it most satisfactory. It is much better for us than to record those discounts as other income. In fact, we have no "other income" or "charges" in the earnings statement whatever.

CHAIRMAN SANDERS: I should like to intrude upon the discussion to ask Mr. Sweetser a question. In your business, is it not true that some discounts are quite large, running up to 10% of cloth, or is that a misapprehension?

MR. SWEETSER: I wish that were true, we could absorb it in our profits. As a matter of fact, discounts are sometimes large

and sometimes small, varying a good deal on different items, but, nevertheless, we reduce our material to net figures and so figure them in the standard costs, eliminating discounts of all kinds.

CHAIRMAN SANDERS: I once saw the records of a clothing manufacturer in which there were discounts running up to 10%. In a case like that, it is rather misleading not to include them. This, however, is not to shut off discussion from the floor.

MR. W. W. HENDERSON, *Humphryes Mfg. Co., Mansfield, Ohio*: Mr. Merrill, do you take the other side of that, the discount from sales?

MR. MERRILL: I didn't mention that group specifically. We had a group called "Deductions From Income," in which one of the items was sales discount. That was not considered originally as an operating figure at all. It was simply an orphan account thrown into the statement which was an obstacle that had to be hurdled before we got the net profit figure. We handled that in similar fashion for sales as we did the discounts on purchases. That discount is deducted from gross sales before we get a net sales figure now.

MR. H. W. MAYNARD, *Gillette Safety Razor Company, Boston*: Mr. Merrill spoke of standardizing the monthly journal entries. How are they numbered in the course of the ordinary transactions?

MR. MERRILL: I am going to ask Mr. Cadmus to answer that question, I think he is more familiar with that than I am.

MR. CADMUS: We have thirty-five monthly standard entries at this time. One is miscellaneous, covering the various minor transactions which can't be arranged to any standard entry.

CHAIRMAN SANDERS: Are there further questions from the floor?

MR. RITTENHOUSE: What is included in the natural division of expenses?

MR. SWEETSER: May I answer for Mrs. Woolston? Everything except direct labor and direct materials.

MR. RITTENHOUSE: That is, all manufacturing expenses and commercial expenses?

MR. SWEETSER: Everything except direct labor and direct materials, because they are redistributed over the departments to such an extent that one loses himself in the detail to find out how much any specific item was when they are retabulated, disregarding all other departments.

CHAIRMAN SANDERS: Other questions are in order.

MR. H. E. HOWELL, *General Fire Extinguisher Co., Providence*: I should like to ask Mr. Cadmus after the cards are all prepared, if you have a price change, would it be necessary to completely repunch a whole file?

MR. CADMUS: That situation arose about two weeks after we started the plan, and it was necessary to repunch some four or five thousand cards. However, we rarely have price changes.

MR. HOWELL: Another question, What amount of equipment is necessary? I believe it takes about six seconds for the machine to print. Does that give you an opportunity to do two or three thousand extensions a day? It seems to me, where you have a lot of billing, it would require a tremendous amount of tabulating equipment.

MR. CADMUS: We are billing per day, as a rule, from one hundred to three hundred bills. We don't sell to the individual retailer. All our sales are made directly to grocery jobbers.

CHAIRMAN SANDERS: Are there any further questions on these papers?

MR. JAMES A. RUSSELL, *G. L. Allen & Co., Inc., Philadelphia*: Mr. Merrill, you said on the original statement there were some forty odd sheets, and they have been reduced to nine. Your original statement was typed, but these nine sheets are not typed. How do you present them?

MR. MERRILL: I am sorry if I gave that impression. The statement now is typed, but the part we don't type is the working

sheets for budget reports. Formerly, the working papers were prepared in the accounting department, then typed and sent over to the budget officer. That step we have eliminated. The working papers are kept in the accounting department now, but they are not typed. The regular accounting statement is presented as it was before, except that it is in simplified form.

MR. A. R. KASSANDER, *De La Vergne Machine Co., New York*: I should like to ask Mr. Merrill to repeat the device he described in the consolidated posting report for tracing back on the item. You said you had so much trouble finding out the source of entry if you wanted to look up entries in certain accounts that you added a device to help you do that.

MR. MERRILL: I shall ask Mr. Cadmus to answer your question.

MR. CADMUS: In the preparation of the consolidated posting sheet, the cards were run through to show totals by accounts. That is, each card was not listed. As a result, if you went to an individual account to look up the nature of the debit or credit posting to that account, that posting comprised the total of all transactions during the month. To look up any individual item, you would have to go back through the tabulating cards to the original records.

MR. KASSANDER: Are there any previous tallies of any kind? Do you simply throw all the cards together?

MR. CADMUS: There are entries in the journal, cash book, and other books of original entry. From those books the punched cards were then thrown together and sorted by account. There was thus a single debit and credit entry for each account.

MR. KASSANDER: And you are now doing what to correct that?

MR. CADMUS: Transactions are now recorded through the series of standard journal entries which Mr. Merrill described, and, in running the journal entries on the tabulating machinery we list every card. As the posting medium to the ledger, there are large

sheets showing the listing of every item entering into debits or credits to ledger accounts.

MR. KASSANDER: Thank you.

CHAIRMAN SANDERS: Are there any further questions?

MR. EDWARD J. DILLON, *Edward J. Dillon & Co., Kansas City, Mo.*: In that posting medium, you can readily identify any item by the numbers from that total sheet?

MR. CADMUS: Yes, before punching any transactions on a card, we assign an identification number. We start the vouchers from one up, at the beginning of each month, and when the card is punched that number is punched also. In tracing back any transactions, we need merely to go to the sheet, and look up the original record in a few moments through use of the identification number.

MR. DILLON: That readily identifies it.

MR. CADMUS: Yes.

CHAIRMAN SANDERS: There is one question I should like to ask Mr. Rowland. He is an engineer, and engineers sometimes tell us accountants a few things for our soul's welfare. Mr. Rowland made one of those remarks this morning when he said that the average run of cost systems do not satisfy budget requirements. I wonder if Mr. Rowland could specify a little more distinctly what the average run of cost systems is, and wherein they fail to satisfy the budget requirements.

MR. ROWLAND: I have had a little experience on that subject due to the fact that we are now in process of preparing a standard cost manual for a certain industry, and in doing that we have discovered that the cost systems manufacturers are using in this industry range all the way from the mere itemization of expense in which they automatically add a certain amount for profit, to the standard cost system. Very few of them have the standard cost system, however. The system used in most companies is an average cost system. It is simply an average of one month to the other, and it doesn't give you any opportunity for costing or knowing where you are heading.

The only kind of cost system which really satisfies budgetary requirements is one which I would call a predetermined cost system. It is simply a variation of standard costs which means you predetermine what the cost is going to be for each product and department, and when you get through, predetermine what your profit is going to be. In fact, this kind of predetermined cost is almost a budget controlling cost, just as the sales budget and manufacturing budget control quantities.

Now you come along with your expenses during the month and the actual costs. You see how they are varying from the standard or predetermined cost budget, and have a chance to do something about it. If you don't, all the other budgets are going to be wrong.

CHAIRMAN SANDERS: Thank you, Mr. Rowland. I think it is always well to hear from somebody who is not primarily an accountant, and get the benefit of his point of view. Now may I devote a few minutes to the schedule on the back of the leaflet, about which questions have already been asked.

You have already been advised that I am connected with an educational institution, and one of the disadvantages of that position is that people have the foolish impression that we know a lot, and they write and ask us questions. No question is more common than, "How much does accounting cost? or, What is the average cost? I personally have seen very little data on that subject. If some of you have, I wish you would please refer me to it. For this occasion I thought it would be well to collect a few figures on the subject, and the substance of the figures is given on page 151.

I am well aware that any of the statistical experts could attack these figures and prove that they do not tally. There are inconsistencies, but I have prepared them as the best picture I could find from returns from about sixty different plants. These figures are intended to cover the number of employees in the accounting departments, together with the cost of their salaries. Maybe here and there some plant included some item other than salaries, but if you glance down the items, you will find they run fairly uniformly, in that the cost, that is, the accounting cost, figures correspond pretty well with the number of people employed.

There are two main groups of figures, namely, the total cost of accounting which you see runs to about .82 of 1% on the average of the sales, whereas the cost accounting on the average

**THE COSTS OF ACCOUNTING**  
**Number and Salaries of Employees**

	No. of Plants	Sales \$	All Accounting (Including Costs) No.	% of Sales	No.	Cost Accounting \$	% of Sales
A. Machine Shop and Assembly	19	\$101,075,000	534	.87	150	\$231,425	.23
B. Furniture—Woodworking	5	5,850,000	45	1.08	17	26,400	.45
C. Foundry—Iron and Steel Castings	11	70,938,800	358	.88	137	224,738	.32
D. Portland Cement	2	9,500,000	31	.66	13	26,300	.28
E. Paints, Varnishes, Chemicals, etc.	5	57,000,000	258	.58	47	86,990	.15
F. Textiles	6	41,630,000	185	.58	43	76,700	.18
G. Paper	1	2,750,000	4	.36	3	7,000	.25
H. Food Products, etc.	2	7,384,000	40	.96	12	18,718	.25
I. Brass and Copper Work	3	23,100,000	65	.40	21	34,300	.15
J. Printing	2	17,150,000	194	1.73	91	151,850	.89
K. Miscellaneous	3	10,100,000	87	1.52	32	78,000	.77
<b>TOTALS</b>	<b>59</b>	<b>346,477,600</b>	<b>1,751</b>	<b>.82</b>	<b>566</b>	<b>962,921</b>	<b>.27</b>
<b>M. Chair Stores—Retail</b>	<b>1</b>	<b>20,000,000</b>	<b>14</b>	<b>.10</b>	<b>3</b>	<b>4,600</b>	<b>.02</b>

alone runs to .27 of the cost of sales. The .27, be it understood, is included in the .82. In other words, my question was as to the total cost of all accounting, including billing, cost accounting, and all other accounting activities. Any number of questions could be raised as to what that should include, but I left it to the individual concern to make their own definition, and here are the figures.

In addition to the table, I worked out one or two other figures. I divided these plants into those which have job cost systems, those having process costs, and those having standard costs. Of course, we realize immediately that standard costs are usually either job or process costs; there is no complete distinction there. But, I asked people to state what kind of a cost system they were running, and I couldn't do anything better than take their word. If they said "standard cost systems," I have called it that, because that is what they think they have!

As stated, the average of all cost accounting runs to .27 of 1%. Those plants running job costs (and there are about 28 of them) are slightly above that average, as you might expect. They are .28. Those running process costs (of which there are about 19) are .19, which again is what we might expect, because usually those having process cost systems can handle their business showing the aggregate monthly totals, and make short work of it. The standard cost plants correspond almost exactly with the average, being .26 of 1% for them as compared with .27 of 1% for the average.

It is only fair to add that in that group of standard costs some companies, to my own knowledge, handle enormous varieties of little items; some concerns which are included in the standard cost plants handle ten or fifteen thousand items. We all know standard costs are frequently adopted for the purpose of saving expense, and, probably without the use of standard costs, those concerns would have a cost out of all proportion to these figures. It is, however, interesting to note how relatively uniform these figures run. I have gathered them because I thought you might be interested to see them, and in order that this association might place on record a few figures of this kind which can be added to by our successors.

Are there any questions on this paper?

MR. WILLIAM L. WALKER, *The Washburn Company, Worcester, Mass.*: What I should like to ask is partly answered, I think. I would like to know if you have any information as to what they should include in their cost accounting. I have found in the past that some concerns consider payroll as cost accounting. Some concerns handle inventory of raw materials and work materials as cost accounting. Some consider the handling of the closing entries of the accounting records as cost accounting, and other various combinations. Do you have any record to show just how far the cost accounting goes?

CHAIRMAN SANDERS: I can't be too definite on that subject, Mr. Walker, but from the information I have, and I have read the replies from each company rather carefully, it is my belief that the payroll compilation and the handling of perpetual inventories of materials are included. I am quite sure that in the majority of cases it is so, but I could not guarantee that is true throughout.

MR. R. W. BUMSTEAD, *Wickwire Spencer Steel Co., Worcester*: Does that also include the timekeeper in the shop?

CHAIRMAN SANDERS: Yes, anybody connected in that way with assembling the cost accounting figures in the shops would be included in the cost accounting.

MR. H. W. MAYNARD, *Gillette Safety Razor Co., Boston*: In the Gillette Company, we have developed a complete factory accounting department. Its total payroll is approximately \$180,000 a year. This includes timekeepers and stock clerks in the factory; the clerks who calculate the employee's premiums on the "point" system of wage payment, payroll department, tabulating machine section, stores ledger, property records and plant ledger, and the preparation for the general ledger of all the monthly journal entries which affect the factory. Each of these services is necessary to the regular operation of the company, and is not an essential part of the cost accounting. In addition to these functions, the actual cost accounting is carried on by a separate group at a cost (a part of the \$180,000 total), of about \$40,000 per year. Only 20% of the total factory accounting expense, therefore, is for cost accounting proper, but that 20% is the element which makes the

remaining 80% of real value to the company for purposes of economy and control.

In our thinking about the "cost of cost accounting," we need to separate the factor of *simplification of accounting records* from that of *simplification of expense*. As industry grows more complex daily, its problems become increasingly urgent. Simplicity in expense is nearly always followed by inadequacy. Adequate control costs money. Of course, no man at the head of a company's finances is willing to spend a dollar unnecessarily. In fact, he is likely to object, strenuously and vigorously, to *any* proposal to spend money—that is part of his job. He will spend the money for a useful service, but he must first be convinced of its merits, just as each one of you, if you were in his position, would need to be thoroughly sold on the value of a new undertaking before you would approve the appropriation. And it is our job as cost accountants to have any proposed plan for improved methods so definitely developed and convincing that he is bound to approve the expenditure of sufficient money to permit us to do a man-sized job.

Cost accounting speakers have said (and it cannot be repeated too often) that cost accounting reports must be stated *in terms which the management can understand*, and so summarized that a busy executive can readily see the true picture without having to wade through detail. But it is equally important that after the reports have been issued, *the management must use them*. I have known many cases where an official has criticized a cost accounting department by saying, "The reports you make are of no value—no one uses them," when the management is at fault. If statements are properly prepared and still are not used, then the management has failed in their duty, by not utilizing the information as part of their regular job. Tomorrow afternoon I shall tell something more about the method by which the cost accountant's statements are made effective by the management.

Criticism has been levied against cost accountants because reports have not been issued until, say, the twentieth of the month, on the ground that by that time they are worthless. Yet, gentlemen, any important leakage or waste in the factory has rarely come into being in one month or two months, but is almost invariably a gradual development over a considerable time. Likewise, the elimination of any important waste also takes time. The fundamental requirement of any report is that it be *accurate* and *dependable*.

Promptness is secondary. I would rather hold up a statement for a week, or two weeks, to make sure that a doubtful figure is not only arithmetically correct, but presents the fact as to what happened last month, than to issue in haste and explain at leisure. (In fact, expenses fluctuate so much that a single report, no matter how true, is a dangerous basis for laying blame or deciding a policy.) Then month by month, as leaks and wastes are disclosed by successive reports, a persistent, systematic pressure is applied to stop them up and substitute efficiency.

One thought more. A company cannot afford to send a boy to do a man's work. Yet many a concern is still, in effect, employing "boys" to do cost accounting work, and not giving them the opportunity or the encouragement to grow to become men.

I believe that American manufacturers ought to spend at least five times as much money for cost accounting, pure and simple, as they are spending at the present time. If they do, we will be able to do our job properly, and save them many times the extra expense.

CHAIRMAN SANDERS: We appreciate Mr. Maynard's remarks, and it is well to have all sides of this question presented. In presenting this subject of simplification, we have not intended in any sense to identify it with inadequacy. We fully intend to be adequate, but one expression of this subject this morning is that the accounting department is measuring all other departments in their performance, and must in turn consent to be measured. We get no further than the words of Scripture, "with whatsoever measures ye measure withal, it shall be measured unto you again." The factory departments will turn around and say that to us.

Mr. Sweetser, I have pleasure in returning this meeting to your charge.

DIRECTOR SWEETSER: I think that Professor Sanders, since he is a member of the National Board, would not necessarily expect an expression from this group. I do feel, however, a rising vote of thanks should be offered to the speakers who have prepared this material and who have gone to considerable trouble in presenting it.

The members arose and applauded and the meeting adjourned at twelve-thirty o'clock.



**SESSION IV**  
**PLANT AND PROPERTY RECORDS,  
APPRAISALS, AND DEPRECIATION**

WEDNESDAY AFTERNOON, JUNE 13, 1928

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This Session Was Organized Under the Direction of

**GRANT L. BELL**

Pennsylvania Appraisal Co., Scranton, Pa.

H. B. GROUSE, after completion of a high school commercial course, was engaged for several years in bookkeeping and accounting work, being six years with the Library Bureau in charge of Accounts Payable and Cashier. He then engaged in public accounting for six years and since then has been employed by the United States Rubber Company in the capacity of Assistant Comptroller. He is a certified public accountant, a member of the American Society of C. P. A.'s and of the National Association of Cost Accountants.

B. W. LEMLEY, after a high school education, entered the engineering field and was trained in appraisal work under his uncle, Chas. C. Lemley of the Lemley Appraisal Company. He was then associated with Coats and Burchard for sixteen years, serving as general manager and vice-president. He was later employed as assistant general manager of the Dempster Mill Manufacturing Company of Beatrice, Nebraska, and after that as manager of the Appraisal Department and Comptroller of the American Radiator Company. He is now vice-president of the Coats and Burchard Company of Chicago. He is an associate member of the American Society of Mechanical Engineers and a member of the National Association of Cost Accountants.

HARRY G. BALDWIN joined the organization of the Burroughs Adding Machine Company, where he remained for fourteen years, serving as machinist, inspector, repair man, service manager, salesman, sales instructor, organizer, and sales and service executive. He then joined the field staff of the American Appraisal Company, where he was quickly graduated to District Manager and then to the executive staff of the Home Office, where he has been for eleven years. He is a member of the National Association of Cost Accountants.

JOHN A. GRIMES was graduated from the School of Mines, University of Minnesota, with the degree of Engineer of Mines, after which he was a graduate student of Columbia University in geology. He then took employment in the Geological Department of the Anaconda Copper Mining Company, Butte, Montana, in charge of mine development work. After nine years of this work, he entered the Income Tax Unit, Bureau of Internal Revenue, Washington, D. C., as valuation engineer, where he is now serving as engineer in charge of depreciation studies. He is co-author of "Ore Deposits of the Boulder Batholith," and also of "Principles of Valuation." He is a member of the American Institute of Mining Engineers, the Society of Economic Geologists, and the Geological Society of Washington.

## PLANT AND PROPERTY RECORDS, APPRAISALS, AND DEPRECIATION

**PRESIDENT STEVENSON:** We will now open our fourth technical session. Our session this afternoon is to be devoted to a consideration of plant and property records, appraisals, and depreciation. The session has been organized by Grant L. Bell of Scranton, a National Director. He seems, by the looks of the gentlemen on the platform, to have assembled a notable array of talent to handle the subject. It now gives me great pleasure to turn the meeting over to Mr. Bell.

**CHAIRMAN BELL:** Mr. President, Ladies, and Gentlemen: I want at the outset to express my personal appreciation of conventions of this kind. I think you will all agree with me that boiled down in approximately two hours' time of each technical session, we have obtained what ordinarily would require from six months to a year of reading to get the same result.

In the Association's bulletins, I have been given credit for organizing this session. That is not fair, as Dr. McLeod has practically picked the men not only for this session, but for every other session. Those men, I believe you will agree, are masters of the subjects assigned to them. It is obvious that to have the fiber and ability to pick men of that caliber, you must be a specialist and you must also concentrate it. It also naturally follows, that being a specialist as a picker of men, you will absolutely fail in picking anything from the opposite sex.

Our first speaker is Mr. Grouse, of the United States Rubber Company, manufacturers of automobile tires, life preservers, erasers for the members of the National Association so that their bulletins and forecasts may function properly, gumshoes, and other similar resilient products. I take great pleasure at this time in presenting Mr. Grouse of the United States Rubber Company!

**MR. H. B. GROUSE:** Mr. Chairman, Fellow Members, and Guests of the National Association of Cost Accountants: I read

some few months ago a paper before the New York Chapter on the subject of Property Accounting, in which I covered the ground more generally than I intend to do here. This afternoon, I thought perhaps it would be more interesting to confine my remarks to a particular phase of the property accounting, and refer especially to the plant ledger records and the supporting data leading up to the books of original entry. With your permission, I will read this paper that I have prepared.

Mr. Grouse then read his prepared paper.

## DETAILED PROPERTY LEDGER RECORDS

H. B. GROUSE

United States Rubber Company, New York

**I**N the time allotted to me I shall attempt to outline in a general way the functions and operations of a detailed property ledger as based upon a unit system.

To begin with, it might be well to mention the principal necessities for a detailed property record and these may be briefly summarized as follows:

First. The need of supporting detail with respect to the property investment account, representing usually one of the largest items reflected in the Balance Sheet.

Second. The basis for more accurate depreciation charges and consequent effect thereof in the cost of operations.

Third. A more accurate basis for determining insurable values and for substantiating claims for losses sustained.

Fourth. A more sound basis for the tax returns both Income and property.

### Primary Records

It is primarily essential, for the successful operation of any detailed property record, to have established a well-organized system for reporting and properly accounting for all transactions affecting the property. Definite regulations should be instituted to the effect that no changes shall be made by way of additions, betterments, renewals, or replacements to the property except under

duly authorized plant orders. Similarly no transfers, alterations, repairs, demolitions, or removals of plant items shall be made except as authorized by transfer orders or work orders. In most industries today some such method is followed out in more or less varying degrees. I would like to emphasize the importance, however, of the strict adherence to regulations under a Plant Order System to properly report all changes affecting the Property Asset Account. Such changes may be classified under two groups as follows:

- (a) New additions, renewals, and replacements.
- (b) Transfers and removals from plant.

All transactions under the first-mentioned group are reported and accounted for on plant orders and those under the second group are covered by transfer orders. All expense jobs for account of the plant property, such as for repairs and maintenance work, dismantling of equipment or demolition of buildings, etc. are done on work orders.

### Classification of Plant

A further requirement for the establishing of a detailed property ledger is a proper unit classification of plant, on the basis of which the various plant items can be segregated for the desired accounting control. The following brief outline of the numerical unit classification as used by our company may be helpful.

The entire plant was first classified into three general groups, namely, Land, Buildings, and Machinery & Equipment. The Land group required no further subdivision. The Buildings group includes all buildings and other construction items and is subdivided, each building being assigned a number from 1 to 90. Machinery & Equipment group was subdivided by departments, each department being numbered from 100 up. Within the foregoing limits, therefore, our numerical classification enables us to number each building consecutively within the limits 1 to 90 and the miscellaneous construction items from 91 to 99, and, with respect to machinery and equipment, the manufacturing departments are assigned department numbers from 100 to 148 and the service and miscellaneous departments are assigned department numbers from 149 up.

Each building and each department are further subdivided into

individual units of construction or machinery and equipment, and decimal subnumbers assigned to each unit; for example—each building is subdivided as follows: .01 Excavation, .02 Foundation, .04 Masonry, .07 Iron Construction, .08 Wood Construction, .11 Windows and Doors, .12 Sheet Metal Work, .13 Roofing, etc. etc.

The complete unit number assigned to each of these subdivisions would be, for example, 4.08 as representing Wood Construction in Building No. 4.

With respect to the unit classification of machinery and equipment, as indicated above, a department number is assigned to each department and, in the case of manufacturing departments, this is done in the order of manufacturing processes as nearly as possible. Subdivisions are assigned in each department from .01 up, an individual number being assigned to each specific machine or equipment unit contained therein. By way of further illustration, the unit number which might be assigned to a mill would be 101.04, as indicating unit No. 4 in the millroom.

With respect to certain classes of equipment, it was not practicable to assign an individual unit number to each item, as, for example, cranes and hoists, lasts and molds, permanent tools, foundry patterns, furniture and fixtures, plans, tracings and drawings, tanks, kettles and vats, etc. Such items, therefore, are classified into three respective groups by departments and to each group is assigned a three-digit subunit number; for example, all cranes and hoists in the millroom would be designated by the unit number 101.001.

## Appraisal

Having established the plan classification and the primary records necessary for recording all transactions affecting the property account, the appraisal, or descriptive inventory record, should be made. The inventory, of course, should take in all Land, Buildings, Machinery and Equipment items, including all completed construction work as of the date of the inventory. This appraisal should be made in accordance with the unit classification and should indicate, with respect to each unit, a detailed description of the component parts with reproductive cost value. With respect to each unit there should be shown the estimated amount of depreciation, based on age and physical condition, against the reproductive value up to the date of the inventory. Each specific unit as inventoried

should be tagged to indicate the unit number assigned thereto, and each building should have its classification number indicated over the doorways for permanent identification. This matter of tagging each machine or equipment unit is very important and it is recommended that metal tags be affixed in such a manner that they cannot be readily detached, and they should also be in a conspicuous place to facilitate identification of the respective units. The appraisal thus taken furnishes a basis for setting up the property ledger which will hereinafter be described.

The appraisal inventory should be written in looseleaf form so that it may be maintained up to date at all times by the insertion of additional descriptive sheets for all new additions, and proper records made therein for transfers and items dismantled, scrapped, or otherwise disposed of.

### Ledger Record

From the values established by the appraisal, the detailed ledger record can be set up containing a separate card for each unit classification. The filing of the cards in order by unit number automatically furnishes the necessary grouping for summary control by buildings and departments so that summary control cards may be readily set up for such groups. It is further advisable to set up controlling accounts for the three main groups, namely, Land, Buildings and Machinery, and Equipment, all of which are subsidiary to and under the Control of the Property Account in the General Ledger.

Each card ledger account constitutes a perpetual inventory record as to cost values and amounts accrued for depreciation. In addition to showing the cost or book values, each card should provide space for indicating the annual rate of depreciation applicable to the unit and the insurable value thereof. With respect to the latter, such values are subject to change from time to time according to fluctuations in present-day replacement costs. For insurance purposes, therefore, the recording of insurable values on the ledger record as a statistical memo facilitates the preparation of valuation statements, either for coverage or to substantiate losses sustained.

As to the form of ledger card necessary for an adequate property record, I shall describe one which has been in use by our company for several years and which has proved to be very satis-

factory. It is 4 by 6 inches in size, printed and ruled on both sides, tumble form. The face or front side provides allotted spaces in the upper portion for unit identification, such as unit title, made by, building and floor location, unit number; also the insurable value and annual rate of depreciation. Below are columns in which to record postings for all items pertaining to the cost value of the unit, such as date, item, folio reference, debit amount, credit amount, and balance.

The reverse side is similarly ruled as to columns, but is used exclusively for recording depreciation accrued and items chargeable thereto. The net amount of depreciation to date is recorded in the balance column.

The cards are filed in trays by unit number with a guide card for each department inserted in the respective positions to facilitate ready reference.

It might be well to state here that this ledger record, thus briefly described, represents only property items completely installed or constructed. All costs of construction work in process, and installation of machinery and equipment during the course of installation are carried under the control of a special General Ledger account known as "Construction in Process," which is supported in detail at all times by individual plant order records previously referred to, showing the cost to date as applied to incompleting plant orders.

### Posting Mediums

Postings to the property ledger are made monthly from the reports, instituted for this purpose, to record changes by way of additions, deductions, and transfers affecting the Property Account. With respect to additions, a monthly report known as "Summary of Completed Plant Orders" is prepared covering all plant orders closed out during the month upon which work has been completed. This report indicates the distribution of costs to the respective units affected and the postings are made from this form to the unit ledger cards, as new additions. The necessary summary entry is made for the departmental and building control cards as well as the General Ledger accounts, the entry for the latter being a credit to Construction in Process Account and a charge to the Property Account.

The postings necessary to record deduction or removals from

plant and transfers affecting the Property Account are made to the respective unit ledger cards each month directly from copies of such Plant Transfer Orders as have been completed during the month. These Plant Transfer Orders indicate the unit classification affected and, in the case of transfers to other departments, the new unit numbers and new locations are shown, thereby constituting complete journal entries from which postings may be made to the individual unit cards and monthly summaries prepared for posting to the control cards and General Ledger accounts.

In the case of new additions, a separate detailed description for each new unit is prepared in conjunction with the monthly summary of completed plant orders, giving the write-up of each new machine or equipment unit installed, in the same manner and form as furnished by the appraisal. These descriptive sheets are inserted in the appraisal volume. In the case of transfers, a new descriptive sheet is prepared and inserted in the appraisal volume under the new unit classification and an offsetting record of the transfer is noted as a deduction on the old unit descriptive sheet. Also, in the case of plant units removed by sale or otherwise, notation is made to that effect in the appraisal record. Thus it will be noted that the appraisal record is maintained at all times in agreement with the ledger records and constitutes a complete history of the various property units from the date of acquisition.

## Depreciation

The unit ledger furnishes an excellent basis for the accumulation of accrued depreciation. In our case this is figured on an annual rate by the application of the straight-line method. Rates are predetermined by the appraisal engineers in conjunction with the local factory management for each type of construction, machinery, or equipment, from their knowledge of the estimated life of the various plant items. The standard rates having been applied to the plant valuations as at the beginning of the year, the amount chargeable to operations for the ensuing period is determined. The amount of depreciation accrued on each unit annually is recorded in the credit column provided on the ledger card, the total postings of which constitute the amount credited to the Reserve for Depreciation Account in the General Ledger. The amount thus set up is charged to the factory on a monthly basis to be absorbed in

the cost of production. It will be observed that the amount of depreciation to be thus absorbed in costs is built up by individual units, and the numerical unit classification previously referred to greatly facilitates the departmental distribution of the depreciation charge for cost purposes.

### Checking of Records

The foregoing gives a general outline of a detailed property ledger, but as in the case of any perpetual inventory record these property accounts are subject to selective check from time to time to verify the correctness thereof.

It should be the duty of the property accountant at the factory to make frequent inspections of the entire plant and to enlist the coöperation of the mechanical and engineering departments in order that all work performed may be reported in accordance with the property accounting regulations. This is a very important point in connection with the operation of any detailed property record, as, without a systematic checking of the book records with the physical property items which they represent, there is the possibility of changes being made, particularly in cases of emergency, by way of transfers or removals, without being reported.

### Conclusion

To sum up, in conclusion, a detailed property ledger established and maintained upon the fundamentals herein described provides many advantages over a condensed property accounting record unsupported by specific facts.

**CHAIRMAN BELL:** That was a very clear and concise presentation of the proper way to keep plant and property records, and on the same subject, from a different viewpoint, we are fortunate in having Mr. B. W. Lemley, who was formerly the Comptroller of the American Radiator Corporation, located here in New York, now Vice-President of Coats and Burchard Company, Appraisal and Construction Engineers of Chicago. In his paper, we have the subject covered not only from the viewpoint of the accountant, but also from that of an Appraisal Engineer. Mr. Lemley!

**MR. B. W. LEMLEY:** Mr. President, Mr. Chairman, Ladies and Gentlemen, in discussing the problem this afternoon, I will try to

present to you the processes used by the American Radiator Company, of which I was formerly comptroller. I have tried to leave out all of the minor trouble-giving elements that will creep in, and present it in its broader, fuller aspects, explaining how we handled various property records from the inception of the appropriation up to the final posting of the details on the ledger.

Mr. Lemley then presented his prepared paper.

## PLANT AND PROPERTY RECORDS AND APPRAISALS

B. W. LEMLEY

Vice-President, Coats & Burchard Co., Chicago

**T**HE problems of fixed property accounting are many and varied, and he who attempts to prescribe a universal system to cover all cases has taken on a considerable job.

I returned to my office last week from a trip involving the examination of the plant properties and setting up of fixed plant accounting methods for three large metal working plants in the Middle West, which are about to combine with the idea in mind of cutting down the high cost of overhead and operating expense; these being the days of combines and heavy competition.

These plants, although all controlled by the same interests for a number of years, are separate corporations and have separate Sales, Manufacturing, Engineering, Advertising, Accounting and Financial departments. They have been audited for a number of years by the same firm of auditors—one of the best-known and most conservative firms in this country, who furnish Certified Balance Sheets and Income Statements to the controlling interests.

In 1920, the three corporations were instructed by the controlling interests to enlarge their capital structures, to prepare for an era of expansion, the taking on of new business and new products, and they were authorized to have appraisals prepared and set up on their books—to secure additional capital through the sale of preferred stocks and bonds, and to operate on as nearly a uniform basis as possible against the day when a consolidation should be deemed advisable.

That day having arrived, and the consolidation being now in process of consummation, this is what I found:

All three properties were appraised in 1920 by the same company, in exactly the same manner, by the same men, and as of the same date. These appraisals were spread upon the books of the three companies by their own accountants without the assistance of the auditors.

COMPANY "A" set up the appraisal at the reproductive value, consolidating the appraisal classifications into some fourteen classifications for its own use. These classifications appear to be logical and consistent. The depreciation as shown in the appraisal was set up as Depreciation Reserve. Since 1920, all small tools, jigs, fixtures, piping, etc., which have been purchased and installed, have been charged to operating expense. There have been no additions to Capital Account except for new machinery purchased. The plant capacity has increased over 50% since 1920. In the years 1924 to 1927, inclusive, a large portion of the machinery became obsolete and inadequate, and was torn out and sold, being replaced by larger machinery, which, through close purchasing, was purchased second-hand at a much lower cost than that of the machinery it replaced. During this period, the undepreciated book value of the old machinery torn out was approximately \$100,000, and the cost of the second-hand machinery purchased to replace it was \$40,000. In disposing of the old machines, no credit was passed to Plant Property accounts, the cost of tearing out the old machines and shipping them being charged to Operations, and the salvage recovery credited to the same account. The cost of the machines purchased was debited to the Plant Property accounts.

In 1926 and 1927 the company charged no depreciation whatever on its Plant Property.

In none of the Audit Reports covering these years is any mention made of the method of handling the Plant Property account or the failure to charge any depreciation for the two years.

In discussing these matters with the plant accountant he stated that the question of charging off the \$100,000 of machinery was not discussed with the auditors, as the management felt it was not their concern, because the machinery purchased to replace the wornout machines was bought at such a low figure that the actual value was much in excess of the combined book value of the old machines plus the low cost of the new ones. He stated that the failure to take depreciation for two years was discussed with the

auditors, whom they convinced that the cost of overhauling all machinery in the shop during these two years, which cost had been charged to Operations, would more than offset any depreciation which might have occurred.

COMPANY "B" set up the appraisal the same as Company "A," using the reproductive value as the asset and the depreciation as the reserve, consolidating the appraisal classifications into some eight accounts for its own use. Their accountant, however, in making the consolidation of classifications in 1920, charged Coal Handling Apparatus and Railroad Tracks to Power Plant, but managed to charge all the rest of the actual power plant, including some twelve large boilers, six large generating units, all piping, wiring, switchboards, etc., to Plant Productive Machinery account.

In this company, depreciation has been handled in an intelligent and accurate manner. Few withdrawals have been made from the plant, but there are literally hundreds of items of plant additions, involving such sums as 6 cents, 8 cents, 52 cents, etc. It seems that every purchase order must go over the accountant's desk and each order for equipment of any nature must be marked showing whether the article to be purchased is to replace an article worn out, lost or broken. Thus a purchase order will be written for a scratch awl for 6 cents, or a nail set for 10 cents, and, if, in the space marked "Replacement," the word "No" is written, the accountant marks it, "Charge Tools and Machinery G. L."—and there you are. Since 1920 over \$40,000 worth of charges of this nature have been made on the books, without comment or protest from the auditors, and a most careful inventory of all tools in the entire plant showed less than \$3,000 increase in these types of tools.

On special tools made by the company for its own use the auditors disallowed shop burden, although allowing it in the case of the next company to be described.

COMPANY "C" set up its appraisal on its books at the appraised net sound depreciated value, setting up no reserve for depreciation at all. This company has been depreciating on the diminishing value basis since 1920, using already depreciated values as the starting point, plus additions at cost. As this company's business is nearly all contract work, practically all tools, dies, jigs, etc., are charged to the cost of the different contracts, the principal additions to Plant Property Accounts being for

machines purchased outside and special machines and buildings built by themselves for their own use.

As it now stands, this company's figures do not mean much to themselves, to the controlling interests, or to anyone else, and for consolidation or merger purposes they are hopelessly inadequate.

Perhaps the foregoing description of the problems involved in the investigation of the Fixed Property Records and accounting of but three similar concerns, will explain, in part, at least, the reasons for the papers to be read, the discussions, and the suggestions to be offered at this afternoon's meeting.

To install a set of accurate Property Ledgers for a new property or industry under construction—or just completed—is one problem; to revise, reclassify, and adjust the Property Ledger for an industry which has been operating for a number of years is an entirely different one.

As our good friend, Baldwin, who will address you later on the subject of appraisals, will tell you—in either case, a carefully proposed, detailed appraisal is of invaluable assistance.

One of the first requirements of a property accounting system is a carefully worked out Classification of Accounts, designed to furnish intelligent classifications for the use of the various executive, accounting, costing, and other interested departments. After the classification of accounts has been adopted, it should be strictly followed in all accounting operations affecting the fixed properties. A sufficient number of copies of this classification should be prepared and furnished to each department or individual having to do with expenditures or accounting for the fixed properties.

An accounting practice should be prepared, in which all problems encountered in the recording of property costs are answered, clearly and concisely, and the necessary forms should be worked out so that the recording may be carried on in a systematic, accurate, and intelligent manner.

The following accounts, forms, and practices have been found to work out most satisfactorily. They are intended primarily for large corporations with numerous plants, branches, and other properties at different locations. I shall not attempt to discuss the budget control features of these various operations, but will explain how the operations themselves are conducted and controlled, and will use a manufacturing plant as the example; for, while the practice is somewhat different for sales branches and home office

departments, the principles are exactly the same, and the system is equally suitable for smaller industries and corporations, as it has been installed in various smaller organizations, and is working out in an entirely satisfactory manner.

### General Ledger Accounts

The General Ledger accounts are:

1. A General Property Investment account, to which is transferred, at the end of the year, the net of additions to and withdrawals from the fixed property accounts for the current year.
2. An Improvement account, which is charged with all additions to fixed properties during the year. Any transferred property is earmarked, so that this account shows at all times, by eliminating the earmarked transferred items, what new money in total has been spent in plant improvements or extensions during the current year. This account is closed out to General Property Investment account at the end of the year.
3. A withdrawal from Investment account, which is credited with all withdrawals of properties during the year. Any transferred property is also earmarked in this account, so that it shows at all times, by eliminating the earmarked items, the original cost of all property destroyed, sold, or otherwise disposed of during the current year. This account is also closed out to General Property Investment account at the end of the year.
4. A Specific Depreciation account, which is charged with the depreciation actually written off from date of acquisition to date of withdrawal on all property withdrawn from the accounts. This account represents the charge back to depreciation for items discarded or withdrawn during the year, and is closed out at the end of the year as a debit to Depreciation Reserve.
5. An Obsolescence account, which is charged with all unmortized depreciation on property withdrawn or discarded during the year. This account represents the current year's accumulation of actual depreciation not provided for by the annual depreciation charges during

preceding years, and is closed out to Profit and Loss at the end of the year.

6. A Salvage account, which is credited with all salvage recovered from the sale of property withdrawn or discarded during the current year, upon which the salvage value had not been determined at the date of the withdrawal entry: and is charged with all undisposed of salvage. This is a sort of temporary clearing account to permit the withdrawal entries to go through the books before the determination of the value of the salvage.

### Forms

The principal forms are:

APPROPRIATION FORMS, which are six-sheet forms fastened together at the top and so perforated that one sheet may be torn off at a time while the form is in transit through the various departments, without disturbing the rest of the sheets or impeding the progress of the whole set. These Appropriation Forms are in four series, viz.:

SENIOR APPROPRIATIONS—Covering the expenditure for additions to plant or for experimentation or development work costing \$500 or over.

JUNIOR APPROPRIATIONS—Covering expenditures for additions to plant costing less than \$500.

SENIOR REPAIR APPROPRIATIONS—Covering repairs to buildings and equipment costing \$1,000 or over.

JUNIOR REPAIR APPROPRIATIONS—Covering repairs to buildings and equipment costing over \$500 and less than \$1,000.

All Appropriation Forms are printed from the same plates and are exactly the same, except that the words "Senior," "Junior," "Senior Repair," and "Junior Repair," are imprinted in red, in large, open-face type diagonally across the different series, to identify them and to save printing cost.

All Junior Appropriations must be approved by the plant manager and also by the General Manager. All Senior Appropriations, in addition to being approved by the plant manager and the general manager, must be approved by the Executive Committee.

All Appropriation Forms call for the following information: For what purpose the Appropriation is desired; Approximately when undertaking will be completed; Approximately when funds will be required; Benefits to be obtained; Estimate of cost, showing contractor's bid, manufacturer's or agent's price, freight and cartage, plant materials, plant labor, plant overhead, and total cost.

The six sheets of the Appropriation Forms are handled and routed as follows:

The top sheet is a work sheet and is to be filled out in pencil by the individual originating the request for the expenditure. When this work sheet has been filled out, the entire set is turned over to a stenographer or typist, who tears off the work sheet, inserts carbon paper between the other sheets, and fills in the information called for from the copy shown on the work sheet. By providing a work sheet on these and similar forms, a considerable saving of paper and printing is made possible, as it prevents the spoiling of a complete set of sheets in order to get the data ready for typing.

When the Appropriation Form has been filled in, Sheet 5 is torn off and held by the plant in the temporary Request for Appropriation file. The plant manager signs Sheet 1 and forwards all sheets to the general manager, who approves or disapproves all appropriations on Sheet 1 only.

He then submits the Senior Appropriations to the president, or chairman, who approves or disapproves for the executive committee, under the general manager's signature on Sheet 1. The general manager then endorses Sheet 4, showing whether the request for appropriation has been approved or disapproved, which serves as a temporary authorization for the plant to start the project, if approved; or to stop action, if not approved. Sheets 1, 2, and 3 are forwarded by the general manager to the Property Records Department, which records thereon the proper account to which the expenditure shall be charged, retaining Sheet 1, the

signed sheet, for authority to accept charges against the appropriation. Sheet 2, endorsed by the Property Records Department, is then forwarded to the plant as the permanent authority for the expenditure, and also for the accounting. Upon receipt of Sheet 2, the plant destroys Sheets 4 and 5. The Property Records Department endorses Sheet 3, showing that the request for appropriation has been properly approved for expenditure and for accounting, and returns this sheet to the general manager's office to complete his records.

All appropriations are numbered and filed serially, separate series of numbers being maintained for the different types of appropriations.

Expenditures authorized by an appropriation are not permitted after the expiration date; if the work or project contemplated by the appropriation is not completed before the original expiration date, an extension of the time must be secured.

In case work has not been started, contracts let, or purchase orders issued within 90 days after final approval of a request for appropriation, the appropriation is automatically canceled and a new appropriation is required, should it be desired to proceed with the project.

If the amount authorized by the appropriation is not sufficient to complete the project, an "Additional Appropriation" must be secured before additional money can be expended.

### Work Orders

Cost of all expenditures authorized by Senior and Junior Appropriations are accumulated by the plant accounting department, upon Plant Work Orders, and closed out to Property accounts, as marked upon the plant copy of the Appropriation.

### Job Orders

Cost of all expenditures authorized by Senior and Junior Repair Appropriations are accumulated upon Plant Job Orders and closed out to the account marked upon the plant copy of the Appropriation.

All completed Work Orders and Job Orders, clear through the Accounting Department, which checks the same, posts to the Control accounts and forwards them to the Property Records Department, where they are checked and entered against the various

appropriations, corrections, and adjustments made where necessary, and detail postings made to the Property Ledgers.

### **Appropriation and Expenditure Statements**

Each month, each plant sends to the Accounting and Property Records Department a statement showing the status of each appropriation authorized. The Property Records Department then prepares, from the reports of all plants, a complete Appropriation and Expenditure Statement, showing: Number and Date of each Appropriation; Description of Work Authorized; Amount Authorized in Preceding Years; Expenditures to End of Preceding Year; Amount Authorized This Year and Unexpended Balance Carried Over From Preceding Year; New Money Expended This Period; Total Expenditures This Year and to Date; Unexpended Balance; and Overdraft. Copies of this report go to the President or Chairman; the General Manager; the Treasurer; the Accounting Department, and the Plant.

### **Condemned Reports**

These are multi-sheet forms, with work sheet attached, of the same size and collated in the same manner as the appropriation forms, which are used to authorize and to record the withdrawal, sale, scrapping, or other disposal of properties. They require the same approvals and are routed in the same manner as the appropriation forms. At the bottom of the first two sheets is a Journal Entry form to cover the accounting, one of these sheets being for the use of the Accounting Department and the other for the Property Records Department. The Property Records Department identifies the items shown in this report, prices the same, computes the debits to Specific Depreciation and Obsolescence and the Credits to Property accounts and Withdrawals from Investment.

The only forms permitted to be used for posting to the Property Ledgers, are therefore:

Work Orders:	for Additions to Properties
Condemned Reports:	for Withdrawals of Properties
Journal Entries:	for corrections of errors, adjustments of values, and internal transfers of property.

In the case of a property under construction (I think Mr. Baldwin will agree), the simplest solution is to charge all expenditures for plant and equipment to an undistributed account, and then as soon as the plant is ready for operation, to call in the appraisers and have a detailed appraisal prepared, distributing, under the various classifications, the actual money spent in building and equipping the plant. In cost cases this procedure will, in the end, be the cheapest; for it will save endless discussions, correspondence, and arguments between the accounting department and the various other departments, contractors, and vendors, over proper distribution of money spent—this at a time when the cost department is being overworked—installing new cost systems, office systems, and practices, and organizing the office, and the other departments are equally busy getting themselves organized and getting the plant completed and into production.

At the present time, most of the work in constructing and equipping a new plant is done by contract. There are contracts for buildings; contracts for lighting apparatus; contracts for heating systems; contracts for plumbing systems; contracts for power wiring; contracts for machinery; for motors, for tools, for belting, for furniture; contracts galore—each contract covering in one sum, the cost, delivery, and installation of numerous items which must be distributed, after careful analysis, into the various property classifications.

However, if it be decided by the executives that their own accounting staff do the classifying and distributing of the moneys spent, arrangements should be made with the engineering and purchasing departments and the architects so that no contract be entered into and no purchase order issued for the construction or equipping of any part of the plant, unless the contract and purchase order specify that the contractor or vendor shall furnish to the purchaser a "breakdown" of the expenditures under each contract and each purchase order, according to the classifications furnished by the purchaser.

These breakdowns or distributions should distribute the expenditures according to required classification and should be further broken down to show the cost of each classification in each building, on each floor, and where required in each department. The cost of all underground work should be shown separately, in order that proper insurance may be placed upon the properties. The

architects' and engineers' fees and commissions should be similarly distributed to the various accounts and locations.

Cost of freights, foundations, and installation for machines and other valuable units should be shown for each unit.

Cost of small tools, trucks, scales, and similar items can be readily distributed according to location, by the purchasing, manufacturing, or storekeeping department.

In most cases of work done by contract, the contractors are able to give any reasonable distribution of expenditures required, and are generally willing to do so, providing it is so agreed and made a part of the contract. I have yet to find a contractor or vendor who refused to give a breakdown of his costs, or charged extra for it, when it was put up to him before signing the contract; but after the work has been done and the contractor paid, it means considerable extra work for the contractor, and, in many cases, an extra charge is made for furnishing the information.

We now come to the case of a company which has been in operation for a number of years, and whose executives request an adjustment of the property accounts, redistribution of the values, and the installation of new properties ledgers.

In this case the appraisers are called in and instructed to prepare a detailed appraisal of all the properties, using current replacement costs, or cost to replace new, for each item. The appraisers are furnished with the necessary copies of the Classification of Accounts in order that they may properly classify the items appraised, and are furnished with special paper upon which to prepare all field work. This paper is headed up to show the number and name of the account, page number, year and rate of annual depreciation. All horizontal lines for descriptive matter are numbered consecutively, for identification, and vertical columns are provided for reference, date of charge, description, tag number, location, cost to reproduce new as appraised, original costs; reference, date, and disposition of charges, when withdrawn.

Using this paper, the appraisers list the entire properties, affixing brass identification tags to all principal items of equipment. The various items are then priced, extended, footed, and summarized on this special paper; all being done in pencil. The complete field notes are then returned by the appraisers, and the costs of the various items found by the appraisers are posted in the original cost columns, using the actual costs of the various

items, as far as the records will permit. At the same time, the reference and date of original installation are posted to these field notes. Such items as piping, wiring, etc., which are usually lumped together and charged to capital accounts, are prorated to the various locations and years in the proportion which their accumulated total bears to the appraised total. Any items shown in the capital accounts and not found by the appraisers are investigated, and if not located, are charged off. Items found by the appraisers, but not appearing in the capital accounts, are not capitalized through the appraisal, but are permitted to stand at no value.

After these postings have been made to the appraisers' field notes, a check is made to be sure that the appraisers have not included in the appraisal any items of equipment, the cost of which has not been completed and posted to the books.

These field notes then show references and date of entry, description, identification number, location, appraisers' cost of replacement, and original actual cost for each item. The field notes are then returned to the appraisers for final compilation and typing. All items in each classification showing the same original date of entry should be typed together; all dates to be typed chronologically and totaled for each year.

The typing is done by the appraisers upon special paper furnished to them, which is exactly the same as the field note paper, except as to color, which is white. In typing the final reports, the appraisers prepare two copies—one for their files and one for the client—in which the original costs and final dispositions are not shown. This is done by using a narrower sheet and cut carbon paper. This copy, and the appraisers' insurance summaries are used for adjusting insurance.

The final typed report as returned by the appraisers now becomes the Property Ledger and is immediately posted, either by hand or by machine, to date. We then have a detailed property record, showing the documentary reference and date of acquisition of all properties, an intelligent description of each principal item, an identification number, what it would cost to reproduce new, and the actual original cost. We also have a record of expenditures under the different classifications, by years, in order that depreciation may be stopped at the proper time; and a record of charges back to the depreciation reserve or to obsolescence as the various units are discarded or withdrawn.

All of this may seem complicated and expensive, but the appraisers' charges are from 25% to 40% more than for a standard detailed appraisal; the whole job is completed in a much shorter time than it could be done by the regular accountants and clerks, and without interference with the regular operations of the various office departments.

I started putting the system into the American Radiator Company by organizing our own appraisal department. It worked out very nicely. We found, however, that on a large plant, for every field man making appraisals, we had to have one individual in the office, and on a plant totaling \$3,000,000 it would take the field appraisers from ninety days to four months to complete the field work. Then, the time required in the office was equally long, so, when the work had gone through the office, the largest part of a year had expired.

After operating the system very satisfactorily and presuming it was saving expense, we conceived the idea of having appraisals made by reputable appraisal companies. We had several made, and found that, on hurry-up jobs, the appraisal companies would, instead of having seven or eight fellows in the field, put twenty or twenty-five field men on the job and put in about thirty days, in the field, thus saving the largest part of the time. After checking the appraisers' bills, I found they ran about 40% cheaper than our own costs, when we considered the delays, overtime work in making our appraisals, and in setting up our own records from our own appraisals.

**CHAIRMAN BELL:** The next subject is going to be covered by Harry Baldwin, of the American Appraisal Company. I am sure that will bring pleasant memories to many of us.

Mr. Lemley's paper covered not only the subject of Plant and Property Records, but that of Appraisals in more or less detail, whereas again, Mr. Baldwin's paper will cover the subject of Appraisals alone, but from an entirely different and unique as well as interesting viewpoint. Harry Baldwin, American Appraisal Company, of Milwaukee.

**MR. HARRY BALDWIN:** Mr. President, Mr. Chairman, Members and Guests of the N.A.C.A. In considering the utility of the appraisal, I will present my prepared paper first and then discuss any questions from the floor.

Mr. Baldwin then read his prepared paper.

## APPRAISALS

HARRY BALDWIN

American Appraisal Company, Milwaukee, Wis.

I IMAGINE that few men are called upon to address meetings of this kind without wishing for some invention or discovery that would X-ray the minds of his hearers to enable him to single out those phases of his subject that would be of universal interest.

I surely have a wide range of choice as to what to say to you in the next twenty-five minutes, so wide in fact that should I attempt to touch even on the more pertinent points, I might justly be accused of the same thing described by the negro who complained that his wife talked incessantly, and on being asked what she talked about said "Man, dats jes de trubble—*she doan say.*"

The word "appraisal" is a generic rather than a specific term. In view of this fact we may well devote a few moments to the nature of the modern appraisal and its field of utility. The appraisal serves one or both of two basic major requirements in modern business operations, i.e., the necessity for property records and property accounting, and the necessity of having property values established.

All appraisals will not serve both of these requirements and so it is possible to classify them at once into two broad general types, i.e., those appraisals which do not serve the dual requirement but confine their service to a report of values only, and the other group which serves both the requirements for property records and accounting and for property values as well.

Time will permit but passing comment on the group first mentioned. There are almost as many types of them as there are appraisers, but they all have one common characteristic in that they seek to escape all of, or part of, the process of inventorying the property that they value. In doing so they may rely on individual expert reputation or they may rely on engineering formulas of which there is an endless variety, but in each case a basic detailed inventory does not figure in their procedure.

Such appraisals have a field of utility that, while it is narrowing rapidly, is nevertheless fairly definite. Frequently approximate

values are all that is desired, although these occasions are becoming more and more infrequent. For instance, approximate values will no longer serve as a basis for placing insurance nor will they afford satisfactory proof of loss in case of fire. Most fires start by so-called acts of God, but a sufficient number still start with kerosene and matches to cause insurance adjusters to demand proof of loss, rather than opinion of loss, unsupported by careful inventories.

Another example is the sale and purchase of property. If an entire business is purchased outright the buyer must consider the joint worth of the tangible and intangible values to him, considering their potential use and, since the intangibles are all that the name implies, the property values can and should be accurately inventoried and measured. The seller must know what values he is sacrificing and the inventory is the only accurate means to this end.

Mergers must be made on a comparable basis if the transaction is to be equitable and inventories and detailed valuations are the only means to this end where two or more interests, owning composite properties, combine. The necessity of detailed inventories and valuations for cost and general accounting purposes will be quite apparent from the papers presented during this session, while in financial matters the investor, State Securities Commissions, the investment banker and the property owner all reject approximate valuations in financial operations.

Again, only the most painstaking and provable detail will satisfy the requirements of the Federal and State Government in tax matters; courts and commissions demand accurate valuations in public utility rate hearings, condemnation cases, and the settling of estates and so on through a long list of business transactions in which the modern appraisal plays an increasingly important part.

We get a reasonably clear picture in this outline of the definite trend toward provable appraisals which, if they are to be provable, must rest their proof on accurate and adequate inventories. I know of no better way of picturing this problem of provability in valuations than to draw a comparison with the valuation of stock inventories. You are all familiar with these and have learned by experience, no doubt, that there are few short-cuts that do not impair the accuracy of their results.

Now there is no more omniscience available in the appraisal of

long-lived asserts than there is in the valuation of these quick asset stock inventories. The same penalties obtain for carelessness, incompetency, and inexperience, and the same premiums exist for painstaking accuracy and a systematic, practical procedure that lists and describes units according to their type, size, quality, quantity, and condition. This is true regardless of whether those units are represented by bar steel, bolts, or castings or by machinery, tools, pulleys, or wiring. Such procedure is vital in order that these units may be intelligently priced.

The appraisal of buildings and special machinery is comparable to the inventorying of work in process. The catalogues of the purchasing department will not supply you with the prices applicable to the various units of work in process. Likewise no catalogue will supply the price of buildings and special machinery. Neither are staple articles, and neither have a recognized, known market price.

In both cases it is necessary to reduce these units to elements that have a known market price. In both cases these elements consist of materials, labor, and overhead. They may be bar steel, machinist's labor and light, heat and rent in the case of work in process, or they may be brick, cement, mason labor, and architect's and engineer's fees in the case of buildings, but the same principle and procedure governs in arriving at their current cost.

Those of you who have spent much time, with full details to assist you, in reconciling discrepancies in stock inventories will readily visualize the probabilities of accurate valuations without taking such inventories as a basis of pricing and can accurately gauge the probable degree of success that would follow the effect to prove that which purported to be the value of such an inventory when that value was unsupported by those indispensable details that describe the quality of the property valued.

If appraisers knew where the rain of doubt was going to fall some of this painstaking detail might be avoided, but under the pressure of modern demands it falls in the most unexpected places and at unexpected times, and the appraiser who hopes to retain his professional entity must follow the example of Daniel and be prepared with reasons for the faith that is in him when he is thrown to the lions as he most certainly will be sooner or later.

You may recall that Belshazzar called upon Daniel to interpret the handwriting on the wall and, although Daniel interpreted it

correctly, he was thrown to the lions just the same and only his convictions brought him out whole. We of the appraisal profession have a saying that no appraiser is wholly seasoned until he has had his day in court.

The specific and important details of tying the appraisal into the cost and general accounting procedure are ably covered in the other papers of this session. With this brief sketch of appraisals generally the balance of our time may be devoted to a somewhat broader consideration of the appraisal for cost and general accounting purposes, a consideration that, though broader in its scope, will nevertheless remain definitely within that which I conceive to be the immediate field of cost accounting interests.

The evidence presented at yesterday morning's session on profit trends is only one of the indications of a new era in American industry. The era that we are leaving has been a golden one. With the possession of a boundless wealth of natural resources, the march of invention and American ingenuity in production and marketing have held the boundary lines of profit margins stationary, or have pushed them toward the horizon, leaving a field of maneuver for manufacturing, financial and competitive operations large enough to permit us to ignore some of the lesser economies.

The business fabric of this era, simple serviceable homespun in the beginning, has become a complex fabric of varied pattern and color. Domestic and world markets are changing. Hand-to-mouth buying, an emergency war measure, seems to have won a permanent place as sound merchandising, due largely to our newly developed tendency to change our minds and tastes with disconcerting suddenness, a condition that, according to Elmo Calkins in the *Atlantic Monthly*, produces in business much the same effect as deuces wild in a poker game.

There is a new tempo in American business today. Production and consumption have been brought much closer together and the manufacturer who hopes to keep out of Dun's and Bradstreet's mortality statistics must sleep like a fireman and travel light, ready to change his course at a moment's notice, ready to start with 90 horsepower and to stop with four-wheel brakes.

Volume production and other expedients that have served to hold profit margins in the past are gradually giving way to a new order in which economies in operation and marketing will play

an increasingly important part. Andrew Carnegie, as quoted by Mr. Schwab, sounded the keynote of the new order some years ago when he said "Financial increase in volume of business may be the result of good business or fortunate circumstances, but show me your costs that shall go on from month to month and from year to year and I will tell you whether you are conducting a successful business or not."

In the light of these facts I ask you, as cost accountants, to give serious and earnest thought to better accounting for property and to that which presently does not exist, i.e., to accounting for property value. If we review the history of the last generation alone one cannot but wonder just how great the penalty must be before business will appreciate the importance of so doing.

Our common failure to account for property exacted a fearful penalty during the war income and excess profits tax years. Specific and important exemptions depended on an accurate record of invested capital, and years of enigmatic accounting had so obscured that record and depreciation accounting had been so distorted that many concerns were penalized almost beyond endurance.

The known fire loss last year was in excess of \$500,000,000. I believe that if the unknown loss could be computed, that figure would be doubled due to underinsurance based on underestimates of value, to distorted depreciation, and to lack of property records.

The situation as to state and county taxation grows steadily worse, a direct outgrowth of attempting to levy equitable taxes by legerdemain rather than by property accounting and valuation. The plight of the railroads under the I.C.C. rulings with respect to the recapture clause, if upheld by the Supreme Court, will ultimately reach to pockets of every one of us. The public utilities alone of all the basic industries are gradually working their way through the crystal maze of fallacy with regard to the true sacrifice of the investor and are beginning to account for property and for its value encouraged and sustained by the authority of judicial opinion.

I referred just now to enigmatic accounting for property. Let me make myself clear. The appraisal is not all of property accounting any more than the balance sheet is all of financial accounting. Both constitute a static picture of conditions at a given time. Property accounting, like the Profit and Loss Statement, is a moving picture of events leading up to this static picture. If the

balance sheet is, to quote Sprague, "the origin and terminus of every account," the same is true of property accounting and the appraisal.

Now instead of accounting for property, let alone accounting for its value, we have attempted to comprehend such accounting within a limited and precedent-ridden procedure of financial accounting that, in the final analysis, as far as fixed assets are concerned, does not even measure up to the standards of good bookkeeping procedure; let alone good accounting procedure.

Think for a moment of some of the common practices of financial accounting for fixed assets and measure its excellence by considering what the effect would be on financial records if the other accounts were carried forward in the same manner. I refer to such practices as charging capital expenditures to expense, or modifications thereof, such as capitalizing the cost of a machine and expensing its freight, cartage, and installation and millwright costs, of expensing additions and betterments built with plant labor or capitalizing materials and labor and expensing overhead, of capitalizing demolition costs incident to additions or alterations, or expensing plant renewals, of the common failure to distinguish between betterments, alterations, and repairs, of leaving abandoned properties in the Fixed Asset account, of distorting depreciation with its resultant effect on the accounts and periodic financial statements and other practices that I submit are not even up to the standards of good bookkeeping, let alone good accounting.

As a matter of fact, we are doing an increasingly excellent piece of work in accounting for other assets, including the stock inventories, and a mediocre piece of work in accounting for fixed assets. Careful accounting is carried forward today for stock inventories and, periodically, book figures are set aside and a physical count and check becomes necessary. The results of this check are tied into the accounts. Discrepancies are a serious matter, upsetting everyone until they are reconciled.

Now from a profit-and-loss point of view the only essential difference between physical quick assets and fixed assets is entirely one of the rapidity with which their turnover is realized. Both types of assets are ultimately sacrificed in the business process. Both must be replaced from time to time unless the business is to be liquidated and yet, in one case, we account for their sacrifice and carefully inventory them periodically, and in the other case

we practically ignore their sacrifice, take a casual inventory of them every four or five years, and feel complacently ultra-modern when we do so and do not even take the trouble to tie in the results with the so-called financial accounting records.

A misstatement of physical quick assets amounts to a public scandal and is quite properly disciplined by the profession, but the continued gross misstatement of fixed assets and the depreciation reserve is excused, condoned, and sometimes even praised as being sound conservative accounting and business practice.

So much for accounting for property. As for accounting for the value of property, I cannot improve on the remarks of Henry Rand Hatfield last fall before the American Institute of Accountants at Del Monte, California, on the subject of "What is the Matter With Accounting." He says in part:

Can progress be made without formulating some theory as to what value is proper for accounting purposes. . . . There is, indeed, rather general agreement that in the first instance a newly acquired asset is valued at cost. . . . A statement found in a thesis that your own association has crowned with your noblest laurels asserts "We deny that a given object can have a value to its owner in excess of cost." I am in doubt as to just what the author meant, but surely you and the author alike must agree that what he says evidently is not true. In the more difficult problem as to the basis for the revaluing of assets at the close of a fiscal period the lack of sound theory is as great, the divergence in practice appalling. . . . On this matter accountants have been illogical, inconsistent, and vacillating.

He then goes on to score the rule of "cost or market whichever is lower," designating it as a brilliant instance of flabby thinking, and scores our past treatment of depreciation and lays the major responsibility therefor on accountancy's doorstep. I entirely agree with him in principle, although in a dynamic commodity price situation much may be said in support of the rule, but in the case of long-lived assets whose price cycles are well defined in periods of 20 to 30 years, it is entirely practical and downright necessary to follow value changes if business is to escape a major penalty.

My time is growing so short that I cannot begin to fill in the details of this picture of why we should account for the value of property. I can only sketch in the bolder lines and leave you to fill in the details.

The investment of dollars in a manufacturing enterprise is not an investment of real capital. It is the investment of a capital fund

whose sole significance in the business process is its power to purchase. The real capital invested in such an enterprise is property, raw materials, land, buildings, machinery, and equipment which are purchased with dollars, are brought together in one place, assembled, and then invested in the business.

Property constitutes the real and final investment of capital and is so defined by economists and by every dictionary in common use today.

The first postulate of sound investment is the safety and assurance of a return of capital, which, if properly defined, can mean nothing else than the safety and assurance of a return of property or its then value equivalent. All the dollars in Christendom will not take the place of property and we must recover property, or at least the full means of acquiring it, if we are to continue manufacturing and realize profits therefrom.

Appreciation is enhancement in the value of owned capital, the recovery of which constitutes a contingent liability that may automatically terminate the business if it is not recovered. Appreciation is realized when it has taken place and is presumably permanent. It is earned, in the accounting sense, as the asset which gave rise to it is exhausted, that is, currently. This exhaustion is measured through depreciation based on the value of the asset and should be recovered by depreciation charges as a cost of production. The accounting for it and for its exhaustion is essentially an accounting for capital and the recovery of capital, a function that deserves painstaking and accurate accounting.

In a continuing business, appreciation is not profit in any form unless we choose to beg the economic fact and temporize with the legal aspects of the matter as they presently relate to dividends, etc. In an economic and practical sense, profit results from an increase in purchasing power resulting from an exchange of values. If we discontinue our business and liquidate our capital there is always a question as to the fact of profit resulting from the transaction but, *in a continuing business* where the replacement of capital is imperative to that continuation—be that capital commodities, merchandise, raw stock, coal or machinery and equipment—appreciation over the original purchase price can by no stretch of the imagination be considered as profit.

Consider these facts in the light of orthodox practice. For over thirty years business and accountancy have been recovering *less*

than true capital on the theory that the original investment constitutes the investor's true sacrifice, a theory that, to borrow Professor Hatfield's blunt phrase, "evidently cannot be true," and in recent years conservative estimates indicate that they have been recovering *less than half* of the true capital in the average enterprise.

This means that a \$500,000 property with a useful life of twenty years will absorb a half-million-dollar loss of capital during those twenty years or an average annual loss of \$25,000 which, figuring normal ratios of sales to property investment and assuming 10% as a maximum for earnings, will result from this cause alone in an annual understatement of the total costs of material produced of nearly 3%, a gross overstatement of earnings, and an overstatement of profits of  $33\frac{1}{3}\%$ , with the attendant danger of the distribution of this fictitious profit as dividends, since it does not follow that this loss of capital would necessarily be *realized* in the period in which it was *earned*.

If you are wondering how business has been able to operate with such a loss over this period of time, it is well to remember that a portion of this loss is absorbed gradually through the casual replacement of the shorter-lived assets and that the major portion of it is in the nature of a deferred, hidden liability, with absolutely nothing in the accounting records to indicate its presence. Depreciation is out in the machinery and building, not in the books of account or in any book that was ever written, biding its time until the day of reckoning when it will reveal itself in the form of deferred maintenance, decreased efficiency, increased renewals and repairs, or in the necessity for outright replacement.

It is the fact that such losses are hidden from the argus eye of the auditor that reveals the necessity for property accounting and periodic appraisals. That it is so hidden has made it possible for business to continue the misstatement of fixed assets and depreciation reserve accounts, using them as a cushion to disguise operating losses in years of poor business and, in some cases to maintain dividends out of overstated earnings and profits, a practice that might, by some stretch of the imagination, be overlooked if there was a depreciation fund of liquid or quick assets to support such depreciation as is charged and deducted from earnings.

It is rare indeed to find such a fund unless we wish to consider

surplus as such, in which event surplus is overstated by a known or determinable liability rather than a contingent one. The day of reckoning that I have just mentioned is upon more than one industry and individual plant today. I could take the entire afternoon telling you of business ships that I have seen during the last two years, sound in hull above the water line, but that will not stand inspection in drydock.

I have one particular industry in mind that has been going through a period of economic stress for some years, which is facing this day of reckoning and is appealing to the bankers only to find them adamant in the matter of capital loans, while the bankers are learning that the near-sighted interest that they have taken for years in quick assets, practically ignoring the fixed assets, will not secure their long-term lines of credit or keep the manufacturers on whose prosperity they depend out of the hands of the sheriff.

My time is up, and in closing I want to say that I believe that the correction of these conditions is largely the privilege of the cost accountant. In one of the sessions at the Chicago Conference last year some remarks of Mr. Addison Boren of the Yale and Towne Manufacturing Co., have stuck in my mind to the effect that cost accounting is simply the unfortunate title applied to a job which should be, and in time will be, possibly 10% accounting and 90% constructive guidance to management.

I think that that day and its possibilities is in the immediate future, the baldest opportunity that lies before you for in the new order management will gravitate to you for council and facts as never before. Management frequently *worries* about its business because it lacks the facts with which to *think* about it, and the cost accountant who anticipates its needs will find a sure reward.

On the other hand, to those who have a craving for the unknown and for worth-while accomplishment, countless new trails remain to be blazed and discoveries made of such practical and vital importance to a great people that no man need regret the opportunities of a Stanley, or the accomplishment of a Pasteur, for the next twenty years of American business has all the potentialities of new country and The Great Adventure.

CHAIRMAN BELL: Keeping in mind that we still have the subject of depreciation to cover, the meeting is now open for discussion of the three papers we have already heard.

PRESIDENT STEVENSON: Does any gentleman have any questions to ask any of the speakers? I am sure they will be glad to answer them. Do you have any views you would like to express? We would be glad to hear from you.

MR. THOMAS J. BURKE, *Cost Association of the Paper Industry, New York City*: I have a question about reproductive value. Would it not be sufficient in your opinion, Mr. Baldwin, if the fact that is the difference between the reproductive value and original cost were ascertained and duly noted so that a reserve could be built up to take care of this difference? If larger profits can be made, a reserve may be built up to take care of the increase in the replacement value of the plant, which, in my opinion, is better than attempting to set up the replacement value on the books.

MR. BALDWIN: Mr. Burke, perhaps I should have made that clearer. I have made several other addresses on this subject in which I have taken this up more fully, but the time is so limited here that I did it but briefly. I hold on this matter that somewhere and somehow, accounting for property and for its valuation should be carried forward. I am not at all sure that value should be set up on the books, although I think that is perhaps the place for it. It doesn't even have to be carried in ledger form. The main thing is, we must know the amount of liability for replacement of properties and accurate and systematic accounting procedure is needed in order to accomplish this end. It is the same problem that we meet in any ordinary accounting procedure.

MR. BURKE: I want to say that I am in entire agreement with you on the point that this question of providing for the difference between reproductive value and original cost is most important, but I don't believe we should improve matters at all by setting up reproductive values on the books.

MR. BALDWIN: In that connection, prophets are frequently beheaded, if I recall it rightly. Something sad happens to them. The only thing apparently that we can do with any reasonable degree of safety is to go on making history. I presume to say every business generation for the last 150 years has, perhaps, thought that same thing, but a study of price cycles of long-life properties

as far back as we have any records that are authentic, shows clearly defined trends or cycles averaging from 20 to 30 years. There were five such cycles if I recall correctly, in which the movement was almost as regular as though they had plotted these ups and downs in advance. The maximum fall of the dollar's purchasing power below a 1913 par was thrice reached approximately 45%, and has gone over this par as high, I believe, as 45% in those times.

MR. BURKE: Isn't it a fact that after every great war, prices gradually recede to normal?

MR. BALDWIN: You mean in purchasing power?

MR. BURKE: Yes.

MR. BALDWIN: That was true of the War of 1812, it was true of the Civil War, but it was not true of the Spanish-American War nor has it been true of the World War as yet. There has been some slight recession, and commodity prices are showing some inclination along similar lines but the price of long-life properties, taken the country over, is on an average practically the same as it was in 1922 and 1923.

MR. J. ROSS SMITH, *Western Electric Co., New York City*: It is not clear to me what this monster is that is about to devour business. Is it failure of companies to depreciate plant on the basis of appraisals or replacement costs in place of depreciating on the cost value?

MR. BALDWIN: It is failure to depreciate, Mr. Smith, on the value of the property.

MR. SMITH: What do you mean, by value of the property, cost, or appraisal?

MR. BALDWIN: The cost of replacement.

MR. SMITH: The cost of replacement changes every year.

MR. BALDWIN: Yes, to some extent.

MR. SMITH: Therefore you would change the base for computing depreciation every year.

MR. BALDWIN: I would follow the value changes in fixed properties just the same as I would follow the value changes in inventories.

MR. WM. H. BOEHM, *Fidelity & Casualty Co., New York*: I had a discussion only this afternoon on this very subject. The question put to me was in respect to depreciation on machinery. The price of a particular machine had appreciated in value. It had been in service for a number of years. I was asked how I would figure depreciation on it. I don't know whether you would answer as I did, but my statement was: First, determine the present worth of a new machine of the same character. That is, the cost of a new machine at the present time. Then deduct depreciation from the present value on a straight-line basis for the number of years the machine has been in service. For example, a machine cost \$400,000. This may seem a high price for one machine, but I know of a steam turbine which cost that much when purchased several years ago, and which would cost \$500,000 new today. Now, if this machine had been in service five years and we deducted depreciation at the rate of 5% per year, we would deduct 25% from the present replacement cost of \$500,000. Thus the depreciation in this case would be \$125,000. I don't know whether my method is usual practice with accountants, but it is the way I would determine it.

MR. BALDWIN: I think that generally is correct.

PRESIDENT STEVENSON: I have a question here from Mr. Cerf: What method of recording appraisal value is to be adopted in the case of a merger, where, at the time of the merger, it is known that one or more of the plants are to be closed down, scrapped, and abandoned? Is the cost, that is, appraisal value of such plants to be charged to good-will, deferred charges made against future charges, plant or what? Is the first year's operations to be burdened with the full write-off?

MR. LEMLEY: I have a problem like that right now. I will tell you frankly what we are doing. Here are several plants going into a combination. One is closed down now, and it is to be scrapped. If you get the picture, we are charging it to ancient history. The other concerns are live and continuing plants. The

fellow who owns the old plant which is no good is taking care of his own loss on the plant, which would have been scrapped whether there had been a merger or not, and that, gentlemen, is ancient history.

PRESIDENT STEVENSON: Suppose we combined with nine other plants running about 60% of capacity. Then, say, we thought by combining and closing down two of them, that we could maintain the other eight all right at 80 or 90% capacity. When you make that set up, what are you going to do about the two plants that are to be shut down?

MR. LEMLEY: The valuation then would be the reproductive value less depreciation, based on the fact that the plant is not to be considered as a fully going plant. The depreciation would be set up, accordingly, with that much more depreciation allowed as the reserve. When the plant is closed down, it would be charged against the reserve and it would reduce itself automatically to the true operating value of that individual plant in its relation to the entire merger of all plants.

PRESIDENT STEVENSON: Merely as a layman on the subject, I should like to take issue from the point of view of the investing public. I would not buy stock from a plant whose balance sheet shows the scrap value to begin with.

MR. LEMLEY: That is my first recommendation for a plant which is to be closed immediately, but the plant which is to be closed in two years would be depreciated down to 15% or 20% of its reproductive value.

MR. BELL: He didn't say two years.

PRESIDENT STEVENSON: Closed down as soon as it got into the merger, at scrap value.

MR. CERF: May I suggest this point of view. Possibly the very thing that brought those various companies together was the possibility of better profits all around on the combined capital. That is the reason I suggested in that question the possibility that it might be treated as good-will or as a deferred charge against future operations, but there is an element of future profit involved in the question of taking that plant.

MR. LEMLEY: I think it would have a very poor value as good-will. It might be that it could be charged to deferred operation. However, in the case I have in mind, the combination of some 105 plants, they will be reduced to about 80 live, operating plants. Some machinery will be transferred, other machinery will be sold or scrapped. There will be some financing done in addition. The 80 or 85 plants will make more money than the present 105 plants by cutting down overhead, cutting purchasing, engineering, and operating costs, and the only value to the merger of the plants to be closed down is the value of such machinery as can be transferred to the other plants and used economically in conjunction with the machinery in these other plants. The balance will be appraised and set up simply at the scrap value.

PRESIDENT STEVENSON: Are there any other questions?

MR. CHAS. H. PORTER, *Massachusetts Institute of Technology, Cambridge, Mass.*: There has been a recent development \* of tabulating machine cards in recording depreciation, which is not generally known. It is based on the adoption of a fixed reference date and this reference date once fixed, remains unchanged for a considerable number of years. Among other data there are punched on the card representing each machine,

- (a) The actual cost of machine.
- (b) The depreciation per month.
- (c) The depreciated value of the machine on the reference date.

When the cards are totaled each month for the items just mentioned, it is evident that the depreciation to date since the fixed reference date can be determined by multiplying the total monthly depreciation by the number of months elapsed since the reference date.

This total, subtracted from the tabulated value as of the reference date, gives the net book value at the present time. The difference between this net book value and the total actual cost gives the present balance of the account Reserved for Depreciation.

In the case of a machine bought later than the fixed reference

\* Developed at the New England Confectionery Company by Messrs. F. M. Keefe and W. F. DeMaris.

date, simply extend the value curve backward to the reference date and figure out an adjusted value. That adjusted value, if reduced by the regular monthly depreciation for the number of months between the reference date and the date of purchase, would give the actual cost on the latter date.

This means that you can determine the current depreciation from the total of all cards whether the individual units were purchased before or after the reference date.

For example, take a machine which actually cost \$1,000 and has a depreciation of \$10 a month. If purchased one year before the reference date, its adjusted value on the reference date would be \$1,000 minus  $12 \times \$10$ , or \$880. If, on the other hand, it was bought one year after the reference date, its adjusted value as of the reference date would be \$1,000 plus  $12 \times \$10$  or \$1,120.

The advantage of this method as compared with simply totaling the monthly depreciation and making a journal entry, crediting the reserve that month with that total, is that you can check your to-date figures every month. If the Internal Revenue Inspector is particularly hard-boiled, you can prove to him on this basis that your to-date balances are correct. With any other method, you must, to be convincing, keep permanent records of many subtotals serving no other useful purpose. Under the plan outlined, you take only such subtotals as are useful for control purposes, running the cards through once and getting the figures very easily.

PRESIDENT STEVENSON: I think that is a very interesting contribution, and a very ingenious method of handling it. Are there any other questions?

MR. A. L. ZIMMERMAN, *The American Thread Company, New York*: I should like to ask Mr. Baldwin a question. As I understood his remarks, he advocated taking depreciation on a fluctuating basis. In other words, adjusting the value each year to replacement, and taking the depreciation on that basis. Assume a machine which originally cost \$1,000 with an estimated life of 20 years, depreciation being 5% per annum. If at the end of five years the replacement or reproductive value was \$1,500, I take it that he would advocate depreciation based on 5% of \$1,500.

On the other hand, if at the end of 10 years the reproductive

value had dropped to \$800, following the same method, the annual depreciation then would be calculated at 5% on \$800. In other words, the annual depreciation would be calculated on a variable factor each year, or as often as the appraisal was made. I should like to ask what Mr. Baldwin's experience is in regard to that method for tax purposes. Would the Revenue Department, for example, accept that basis of depreciation?

MR. BALDWIN: Of course, the Revenue Department will not accept it because it contains an element of depreciation on appreciation which is entirely contrary to the regulations. But, it is a very simple matter to segregate that in the accounts. In other words, I do not advocate that we abandon accounting for original costs. We will probably always have to account for them and we probably should always account for them. But, I do recommend that we account for both original costs and value, keeping them so isolated in the accounts that it will always be possible to distinguish between them and the depreciation as based thereon. That can be done by splitting the present Reserve for Depreciation account into a Reserve for Depreciation which will measure the depreciation on cost, and a Replacement Reserve or whatever you care to call it, which will measure the depreciation on value over and above cost. If carried forward in that way, it may be handled without conflicting in any way with the Department's requirements. Does that answer your question, sir?

MR. ZIMMERMAN: Yes.

MR. F. A. SHARP, *The Terry Steam Turbine Co., Hartford, Conn.*: There is a brand new concern being organized and they buy \$100,000 worth of new machinery. Leaving aside installation cost for the moment, that figure is set on the books as \$100,000. At the end of the first year, appraisers are called in to appraise that machinery. They appraise that machinery, making allowances for its expected life at \$80,000. Is the difference depreciation?

MR. BALDWIN: You have a case there that is the exact opposite of appreciation, and as I said during the address, appreciation is the enhancement in the value of owned capital, so in this case you have a shrinkage which is the exact opposite of it, but which is not earned until the assets which gave rise to it are

exhausted. In other words, you have a shrinkage of \$20,000. It is realized in the sense that it has actually taken place and is presumably permanent, but it is not earned until the assets which gave rise to it are exhausted. You only earn this current year's shrinkage and it is taken out in that way. It really becomes the opposite of appreciation. It is a *measured* liability instead of a *contingent* one.

MR. SHARP: If the firm was appraised every year, would that be a scientific manner of arriving at depreciation, laying aside for the moment appreciation? If they had an appraiser in every year, would that be a scientific way to go about it?

MR. BALDWIN: Quite naturally, I am a prejudiced witness. I surely think it would, yes.

MR. SHARP: Supposing, over a period of years, they were appraised each year, and that amount got down around \$50,000 net value finally, and then came a year of appreciation. Then if you reverse the theory, there would be no depreciation that year. Would that be true?

MR. BALDWIN: No, that would not follow by any means, because the fact of depreciation has nothing whatever to do with the rise and fall of values. Your depreciation is a tangible and usually a physical thing, and it is only when you apply the percentage of the measured and realized loss of utility *during a given period* against a dollar and cents' basis do you begin to *value* the loss of that utility to you. Therefore, after you have realized the shrinkage of \$50,000 and start, through some turn in the cycle of prices, back up the scale, the fact that it is again appreciating gives you an increasing liability on the remaining balance of the property which must be computed, and should be computed, in the same way.

You have brought a thought out there, however, that I think it is well to stress. It does not follow by any means that you are going to adjust your books *every year*. We mustn't lose sight of this fact in all discussions of this problem, that the price cycles on long-lived properties are more in the nature of *tides* as compared to the *waves* of short price cycles of commodities and raw materials. We have short waves of prices in long-lived properties, but they

are rare, based on the last 112 years of price experience. Those cycles are long and rather steady. The shorter price movements in between are of comparatively infrequent occurrence, and it may be that it would be several years before a sufficient change would have taken place in the values of your property to warrant your making any radical adjustments of your books. As a matter of fact, it probably will work out that way in the majority of cases on the basis of past experience. That doesn't relieve you, however, of the necessity of accounting for and knowing when value changes take place in a composite property of sufficient importance to be reflected in the financial records.

MR. A. DI CARLO, *Consolidated Gas Company of New York*: Where the cost of construction of an entire plant (covering several buildings and their equipment) includes certain elements such as salaries of engineers, timekeepers, etc., cost of *temporary* buildings, etc., would you charge a proportionate amount of these elements to each subaccount, or would you carry one account for the total of each of these elements (without "spreading" them over the said subaccounts)?

CHAIRMAN BELL: I will ask Mr. Grouse to answer that question.

MR. GROUSE: We have a unit subdivision in the construction of a building for items of that kind. We do not attempt to spread it over the individual subunits making up the other component parts of the building. This unit covers engineers' fees and items of that kind. Architects' fees and engineers' fees constitute a unit classification of the building, to appear as such in the write-up of the appraisal, and also to appear as a ledger account, under that building.

MR. DI CARLO: When establishing the amount of the entry for renewals, do you add to the cost of the equipment involved a percentage to cover its proportionate cost of these elements? For instance, if the cost of construction of the entire plant was \$10,000,000 with an additional item of \$1,000,000 fixed fee, and later power equipment costing \$500,000 was renewed, would you, in the amount of the renewal entry therefor, include \$50,000 for its proportionate amount of the fixed fee?

MR. GROUSE: Are you speaking about machinery now?

MR. DI CARLO: Assume the \$10,000,000 to include both buildings and equipment.

MR. GROUSE: I believe I misunderstood your first question. You mean that the fee applies in this case to the entire plant and not to the building alone?

MR. DI CARLO: Yes.

MR. GROUSE: Engineers' fees would be segregated to determine that portion applicable to the building, and the rest would be prorated to the machinery and equipment units as part of the cost.

MR. DI CARLO: On the same basis?

MR. GROUSE: If the project was done as a whole, yes. There would be a proration between building construction and machinery or equipment units.

MR. DI CARLO: The cost of undistributed items, e.g., temporary buildings, fees, etc., to be prorated into *one* amount for building construction, and into *individual* amounts for each *individual* subaccount of machinery and equipment?

MR. GROUSE: Yes.

CHAIRMAN BELL: Several months ago, Mr. J. A. Grimes, who was making a study of depreciation in the hope of establishing uniform rates of depreciation by industries, appeared before the National Association Board of Directors. After hearing his presentation of the subject and discussing it thoroughly, the consensus of opinion was that we, representing such a diversified lot of industries, would not feel like going on record binding any particular industry in any way, but we felt that the study could not help but result in good. The Internal Revenue Commissioner has loaned Mr. Grimes to us to present that subject, and Mr. Grimes will now speak to you at this time.

Mr. Grimes then presented his address.

DEPRECIATION STUDIES OF THE BUREAU OF INTERNAL REVENUE UNDERTAKEN WITH THE VOLUNTARY CO-OPERATION OF ORGANIZATIONS NATIONALLY REPRESENTATIVE OF VARIOUS INDUSTRIES OR BRANCHES OF INDUSTRIES

J. A. GRIMES

Internal Revenue Dept., Washington, D. C.

Introductory

THE Commissioner of Internal Revenue has authorized the initiation of studies of depreciation and maintenance charges with a view to the adoption of a definite procedure in the future audit of tax returns. The results of such studies will be authorized for use only in the preparation and audit of tax returns filed after date of publication of such results. These studies will be undertaken solely upon a basis of the voluntary co-operation of taxpayers with the Bureau of Internal Revenue in reaching mutually beneficial conclusions.

Depreciation for income tax purposes is defined as the gradual exhaustion of the usefulness of property employed in the trade or business of a taxpayer, such exhaustion comprising wear and tear, decay or decline from natural causes, and various forms of obsolescence such as are attributable to the normal progress of the art, inadequacy to the growing needs of business, and the necessity of replacement by new inventions. (Articles 161 and 162, Regulations 69).

The Commissioner of Internal Revenue and the taxpayers or associations of taxpayers in certain industries have agreed upon standard rates of depreciation as reasonable for major items of plant and equipment used in those particular industries, and the preparation and audit of the returns of such taxpayers have been greatly simplified and expedited by these agreements. The present studies will extend similar agreements to the taxpayers of other industries as rapidly and completely as possible.

The scope of these studies embraces physical assets alone; information neither being requested nor desired with respect to the depreciation of patent rights, good-will, leases, or other tangible or intangible assets not of a physical character.

## Equity and Simplification, the Objects of the Bureau of Internal Revenue

The results which are anticipated from studies of depreciation and maintenance are: greater equity in the collection of income taxes imposed by the several Revenue Acts, and simplification of the preparation and audit of tax returns with consequent saving of material amounts both to the taxpayer and to the Government. The prime objective of the present studies is greater equity in tax collection, but an important secondary consideration will be the savings of substantial amounts both to the Government and to the taxpayer through the elimination of avoidable disputes. It is obviously impossible for several thousand income tax auditors and revenue agents to exercise similar judgment in the review of tax returns, particularly as the auditor or revenue agent in many instances has not had the advantage of experience in the industry for which he is auditing or examining a return. The publication of average rates of depreciation, by items of plant and equipment, by industries, is essential to the elimination of personal inexperience and error, either by representatives of the taxpayer or of the Government.

### Miscellaneous Applications of Results of Studies

Many industries anticipate that the determination and publication of standard rates of depreciation will be even more important for other business purposes than for the preparation and audit of income tax returns. One service will be to make information available to the members of the industry who are making inadequate provision for depreciation. Every industry has such members who do not consider depreciation in computing production costs and selling prices, and these members are undesirable competitors before they are eliminated by capital consumption and credit exhaustion. It has been a recent practice of many fire insurance adjusters to ask for a copy of the last income tax return as an aid in computing depreciation rates in connection with fire losses; banks are requiring careful analyses of depreciation accounts in connection with financing; and other phases of normal business activity will be benefited by published standards of depreciation based upon the aggregate experience and opinion of an industry.

### Initiation and Conduct of a Depreciation Study

Studies of depreciation and maintenance are now being undertaken by the Bureau of Internal Revenue with the voluntary co-operation of nationally representative organizations of industry for the purpose of reaching mutually beneficial conclusions, in accordance with a plan proposed by the Department of Manufacture of the Chamber of Commerce of the United States and approved by the Commissioner of Internal Revenue. Any organization, nationally representative of an industry or branch of an industry, which wishes to initiate a depreciation study in coöperation with the Bureau of Internal Revenue, takes official action authorizing the study and appoints a committee to conduct the study. After a conference with representatives of the Bureau of Internal Revenue as to the scope and methods of the study, this depreciation committee proceeds according to its own ideas and methods to arrive at conclusions which are presented to the Commissioner of Internal Revenue in the form of recommendations. These recommendations are then distributed by the Bureau of Internal Revenue to as many as possible of the individual members of the industry for comment and criticism. The results of this survey by the Bureau of Internal Revenue are brought to the attention of the depreciation committee of the industry, and the recommendations of that committee are then accepted as made, or, modified in view of objections voiced. The results of the study which are generally approved by the majority of the members of an industry are then published with authorization by the Commissioner of Internal Revenue for their use in the preparation and audit of tax returns filed after date of publication. It is inevitable that some discrepancies will arise between rates of depreciation determined in this manner for the same depreciable assets in different industries, since the results of the studies will be published industry by industry rather than asset by asset. Different conditions of use will explain and justify a large number of these differences, but when no differences of use can be cited the Bureau of Internal Revenue will expect the several industries involved to adopt common and mutually satisfactory rates. The appointed representatives of the industries involved will be invited to confer with each other and to effect necessary reconciliations or adjust-

ments, when, in the opinion of the Commissioner of Internal Revenue, these are required.

### Adaptation of Conclusions to Variable Conditions of Use

The purpose of the Bureau of Internal Revenue is to determine flexible standards of depreciation, not to establish rates from which no deviation will be permitted. Any inflexible rule will work some injustice as there will be numerous exceptions to almost any rule of that nature. The plan is to determine average rates of depreciation which will be accepted by the Commissioner of Internal Revenue without substantiation and without adjustment, and to require substantiation in proportion to the departure of the rates used from such average rates. No reasonable rate of depreciation will be prohibited, and within a certain range of the average rates little substantiation will be required. Results available from studies now in progress indicate that a variation of one-fifth in either direction from the average rate will usually cover normal variation both in opinion and as to conditions of use. Thus, with a five-year average life, variations of from four to six years would be permissible, for a ten-year average useful life the variation would range from eight to twelve years, and with a fifty-year average useful life there would be a permissible variation from forty to sixty years, all on the basis of a one-fifth variation in either direction from the average rates. Within such a range the only substantiation required for the consistent use of any rate of depreciation selected will be a statement of general conditions which, in the opinion of the taxpayer, result in a deterioration of his assets at a rate greater or smaller than the average rate of deterioration in his industry. When rates of depreciation more or less than the normal range are used, it will be necessary to furnish a specific and convincing statement of the abnormal conditions which make such rates reasonable. It will be desirable to have as many as possible of these abnormal conditions stated in published conclusions, together with adjustments which an industry considers reasonable in view of such abnormalities, but this is not essential, as the individual taxpayer will always have the opportunity to depart from the average rates when unusual conditions apply to his specific case.

### Minimum Requirements in a Study of Depreciation

The Bureau of Internal Revenue considers two things to be essential:

- (1) A statement of the useful lives of the depreciable assets of an industry by items or by classes of similar items, preferably departmentalized according to the different processes employed, services rendered, or products made by the industry. Such a schedule affords the only possible basis of comparison between the diverse methods for depreciation accounting, and gives the fundamental information required for the determination of essentially similar depreciation rates irrespective of the method employed.
- (2) A statement of the principles and methods of depreciation accounting best suited to the business conditions of the industry to which the results of the study will apply.

Nothing is required by the Bureau of Internal Revenue in addition to the statement of item or class rates of depreciation and the statement of accounting policy and methods, but, when an industry considers the inclusion of corollary subjects to be desirable, the scope of the study may be extended to cover maintenance and other matters related to depreciation.

### Methods Commonly Used for Computing Depreciation

The Bureau of Internal Revenue customarily approves three principal methods for depreciation accounting:

- (1) The straight-line method which provides equal depreciation per unit of time for the useful life of the asset under normal conditions of use, regardless of the work done.
- (2) The unit-of-production method which provides equal depreciation per unit of work done during the useful

life of the asset under normal conditions of use, irrespective of the lapse of time.

- (3) The job method which provides for charging the difference between cost and salvage value of single-purpose or special-purpose equipment against the job for which it must be purchased.

Any other recognized trade practice may be used for determining depreciation deductions, providing such methods result in annual charges to depreciation over the useful life of the depreciable property according to some reasonably consistent plan. Modification of the methods, above listed, are permissible by reason of variations in expenditures for maintenance, variations of time in use, and any other conditions which cause the rate of deterioration of assets to change from time to time. (Articles 161 and 165, Regulations 69).

### Additional Methods for Computing Depreciation

Various other methods have been advocated for depreciation accounting and some of these methods have been used to a considerable extent, such as the various declining balance or diminishing balance methods which provide the greatest amount of depreciation in the first year of use with continually decreasing amounts of depreciation in later years, and the sinking fund method which depends upon interest earned by amounts set aside for depreciation to provide for amortization of investment at termination of the useful lives of assets subject to depreciation.

The use of any recognized trade practice for computing a depreciation allowance is approved (Regulation 69, Article 165), but the methods mentioned in this paragraph are seldom selected for business accounting. Inasmuch as they would apply to a very limited number of the members of any industry, the Bureau of Internal Revenue would prefer to consider them for individual cases where their use seems necessary, rather than to include them in depreciation studies and agreements applying to whole industries.

## General Requirements of Bureau Regulations for Depreciation Accounting

The capital sum to be replaced by depreciation allowances is the cost (or other bases recognized by the Revenue Acts) of the property with respect to which the allowance is made. Changes in market value other than those resulting from exhaustion, wear and tear, or obsolescence, are not accepted as a basis for determining deductions for depreciation. That is, an investment in depreciable property is regarded by the Bureau of Internal Revenue as a prepaid operating cost returnable through deductions for depreciation over the useful life of such property. The deduction of an allowance for depreciation is limited to property used in the taxpayer's trade or business. A depreciation allowance, in order to constitute an allowable deduction from gross income, must be charged off, either by deduction directly from the book value of the assets or by credit to a depreciation reserve account reflected in the annual balance sheet. The allowances should be computed and charged off with express reference to specific items, units, or groups of property, each item or unit being considered separately, or, specifically included in a group with others to which the same factors apply. The taxpayer should keep such records as to each item or unit of depreciable property as will permit the ready verification of the factors used in computing the allowance for each year for each item, unit, or group. (Article 162, 164, and 169, Regulations 69). The deduction for obsolescence will be confined to such portion of the property on which obsolescence is definitely shown to be sustained and cannot be held applicable to an entire property unless all portions thereof are affected by the conditions to which obsolescence is found to be due. (Article 166, Regulations 69.)

### Obsolescence

Obsolescence is allowed by law as a deduction from taxable income, as a part of, or in addition to, depreciation. Short-life depreciable assets generally terminate their periods of usefulness through wear and tear, or corrosion and decay. Long-life assets have their terms of usefulness brought to a close principally through obsolescence in one form or another. Two principal types

of obsolescence are generally recognized: the first a sudden loss of useful value brought about by some revolutionary change, and, the second, a gradual reduction of usefulness due to the cumulative effect of small improvements or changes no one of which is in itself sufficient to result in complete obsolescence. The first type of obsolescence can rarely be predicted, as to time of occurrence, and must be accepted as a loss in addition to depreciation, when it is operative. The second type is as certain as physical deterioration and its effects may be predicted with the same degree of certainty. In the depreciation studies of the Bureau of Internal Revenue, no distinction is made between gradual obsolescence and deterioration through wear and tear, decay, or other exhaustion. The depreciation schedules are based upon the estimated useful life in years which the experience and opinion of an industry indicate for each depreciable asset, regardless of whether the useful life is terminated by obsolescence or by other deterioration.

### Item Rates and Composite Rates

The Bureau of Internal Revenue considers depreciation by items, or by groups of items having practically identical physical characteristics and useful lives, to be the soundest basis of accounting. With this method losses are written off when particular items have actual useful lives less than the estimated useful lives upon which deductions for depreciation have been computed. When the cost of an item has been reduced to an estimated salvage value through deductions for depreciation, no further charge for depreciation of that item is possible with item accounting.

Many taxpayers apply an average or composite rate of depreciation to their entire investment in depreciable property, which may comprise many dissimilar items with diverse expectancy as to useful lives. The Bureau of Internal Revenue has no objection to the use of composite rates of depreciation when such rates are determined as accurately as possible from the anticipated useful lives and from the actual or closely approximated costs of the items comprising the aggregate property, but sound accounting practice requires that when depreciation is allowed upon the basis of a composite rate no losses are allowable upon disposal of property. It is impossible to compute item losses by use of a composite rate, since, except by chance, the composite rate does not apply to any

item of the total property; and with the use of a composite rate, depreciation deductions for some items, whose useful lives have been underestimated, are continued after their entire cost would have been returned at item rates of depreciation. Thus it is fair to assume that overestimates and underestimates of useful lives will balance when a composite rate of depreciation is employed, and that, since no profit is recognized by reason of excess deductions for depreciation when the useful lives of some items are underestimated, no loss should be recognized when the useful lives of other items have been overestimated. The preceding discussion of overestimates and underestimates of useful lives has no application to losses affecting the property as a whole, and unforeseen contingencies such as fire, storm, sudden obsolescence, and other casualty, which losses should be considered upon a proper basis with both the item and the composite rates of depreciation.

The principal reason advanced for the use of a composite rate of depreciation is its simplicity. A secondary reason is that some properties are purchased as going businesses and the costs of component parts of the properties are unknown. Under such conditions it may be necessary to use an approximate composite rate of depreciation, temporarily at least. Even with a composite rate of depreciation determined by guess, it eventually becomes necessary to estimate the cost of each asset when it is eliminated from the property account and from the depreciation reserve, and it probably will be more difficult and more expensive to make this estimate in the future than at the time when a property is acquired. Unless separate statistical records are maintained and estimates of the useful lives of items are revised in the light of experience, the accuracy of a composite rate is not subject to the check of actual experience, whereas an item rate is checked every time an item of property goes out of use. The composite rate of depreciation, properly determined and used, therefore, requires all of the basic information essential to the use of item rates of depreciation, and, in addition, the maintenance of special statistical records if the composite rate is to be modified in the light of increasing or changing experience.

### Unnecessary Refinement of Detail

Depreciation accounting involves a conflict between methods correct in theory and those which it is possible to apply in prac-

tice. A practical method cannot be so detailed as to minor items of the investment that the expense for maintenance of records will exceed any possible benefit to be derived from the additional facts which the detail will disclose. The Bureau of Internal Revenue will not insist that the total investment in depreciable property be itemized, but will be satisfied if the list of items or classes of items includes those comprising appreciable percentages of the total investment. If item rates apply to 85 or 90% of the total investment, average or composite rates used for the remaining investment would have to be exceptionally in error to have noticeable effect upon the aggregate amount of depreciation for all assets.

### **Useful Life in Years the Basis of Any Depreciation Accounting Method**

It will be noted that repeated reference has been made to depreciation stated in terms of useful life in years. Schedules listing items or classes of assets used by departments of an industry, and with the estimated average useful life of each item or class of assets stated, will furnish a basis with which all methods of depreciation accounting may be compared, and such a schedule is the only one which will serve that purpose.

A new asset with ten years' useful life will have a 10% rate of depreciation, but if that asset is sold after five years use, the buyer has an expectancy of but five more years of usefulness from the asset and requires a 20% rate of depreciation. If one business and accounting policy charges all costs of maintenance to current expense as repairs, another business and accounting policy which capitalizes some of the maintenance charges, as replacements, must have a higher percentage rate of depreciation in order to retire its capital during the same useful life for a similar asset. Thus, percentage rates of depreciation unaccompanied by a detailed statement of accounting policy are meaningless, while no variation of accounting policy can alter the useful life in years.

The schedule of depreciation rates in terms of useful life in years can be used directly for determining straight-line depreciation on an item basis. Straight-line depreciation on a composite basis, that is, upon the basis of an average rate for all assets rather than upon an individual rate for each asset, may also be determined if the cost of each asset is known. When the cost of items is not

known it will be necessary to estimate such costs and to approximate a composite rate of depreciation comparable to the item rates. To make such approximation the items of property are listed which comprise the total property for which a composite rate is to be determined, and a value is carefully estimated for each item. Appraisals made for other purposes, such as insurance, may be used for this purpose. The approximate value of each item divided by the number of years of its remaining useful life as determined from the schedule of approved useful lives in years for new equipment with proper adjustment for the portion of that period which has already expired will give an approximate yearly amount of depreciation for each item. The sum of the approximate amounts of depreciation for all items divided by the sum of the approximate values of the same items will give a composite rate of depreciation which will correspond essentially to the item rates of depreciation, irrespective of whether or not the total approximate value used in the determination of this composite rate of depreciation conforms very closely to the book value of the assets subject to depreciation. The amount of depreciation is determined by multiplying the book value subject to depreciation by the composite rate of depreciation, as approximately determined.

The adaptation of the item schedules of "useful life in years" to the allowance of depreciation upon a unit-of-work basis is simple. The average number of units of work per annum which may be expected from the asset during its useful life in years must be estimated, and the product of the number of estimated years of useful life and the number of the estimated units of work per annum gives the total estimated units of work for each item. The cost of an item divided by the total number of estimated units of work which it will perform during its useful life gives the rate of depreciation per unit of work. Machine-hours of use, units of production, units of raw materials handled, are all measures of units of work. In the natural resource industries, the unit of production basis for depreciation has become the accepted income-tax method of determining the depreciation of physical assets of longer life than the natural resources which they serve, and the machine-hour of work is rapidly becoming popular in cost accounting as a basis for depreciation in manufacturing industries, particularly those which have varied products and seasonal overtime work. In the depreciation studies of the Bureau of Internal Revenue

both the straight-line (unit of time) and the unit-of-work methods for depreciation are being developed in parallel, whenever this is possible.

### Salvage Value

Salvage value is theoretically deducted from the first cost of a depreciable asset to find the amount subject to depreciation. Salvage value should be clearly defined as the net amount realizable from the sale of an asset in excess of the cost of dismantling or removing the asset. Such net salvage value is seldom a thing of importance, rarely exceeding 5% of the first cost of an asset. Assume that an asset has twenty years of expected useful life. An error of one-quarter of 1% in the rate of depreciation would exceed the maximum possible salvage value, or, stated otherwise, one year's variation in the useful life is as important as the salvage value in a determination of the yearly amount of depreciation. Useful lives of assets cannot be estimated with any such degree of certainty, and the general opinion expressed by industry is that net salvage value is closer to zero than to 5%. It has been recommended to the Bureau of Internal Revenue that it might permit taxpayers to ignore salvage value and to depreciate entire first costs of most assets, with resulting simplification of depreciation accounting.

### Losses in Addition to Depreciation

Uncompensated losses by reason of fire, storm, and other casualty, are clearly distinct from and not covered by deductions for depreciation, and are allowable in addition to depreciation to the extent of the actual loss. (Article 141, Regulations 69.)

Breakage is sometimes caused by cumulative wear or corrosion but generally may be attributed to inherent defects, overloading, carelessness, or other unforeseen contingency. Accounting opinion seems to be fairly agreed that losses by reason of accidental breakage should be treated in the same manner as other losses and charged off in the year in which they occur, irrespective of the depreciation accounting methods employed.

Losses by reason of sudden obsolescence are treated by the Bureau of Internal Revenue in the same manner as other losses, except that when sudden obsolescence can be definitely anticipated

the deduction on this account may be charged off during a short period before an asset is scrapped by reason of the obsolescence. (Article 143, Regulations 69.)

### Alterations

Alterations should be considered in connection with depreciation accounting for industries in which alterations are a matter of importance. Rental buildings require frequent alteration to suit the needs and tastes of specific tenants. These alterations may add nothing to the value of the building nor to its useful life. The alterations made for a specific tenant may be charged against the rental of that tenant, that is, the cost of alterations may be depreciated during the term of that tenant's lease. Recommendations have been made to the Bureau of Internal Revenue by some industries that when alterations for tenants are made in approximately equal annual amounts, such alterations should be charged to repairs and maintenance. Alterations are frequently made by the owners of buildings and of manufacturing plants to care for expanding business. Theoretically, the undepreciated cost of the portion of the asset which is eliminated and the cost of its removal are losses, or costs chargeable to current expense. The cost of installing the alteration or replacement is then added to capital returnable through depreciation. When special problems are a matter of frequent occurrence in any industry, these problems should be clearly stated together with recommendations as to the method best adapted to dealing with the problem for the industry involved.

### Effect of Variations in Rate of Production upon Rates of Deterioration

In some industries the deterioration of portions of the plant facilities, or even of entire plants, will be as great or greater when the plants are idle as when they are in operation, especially when there is little or no expenditure for maintenance during periods of idleness. This is especially true when corrosion and decay are the principal elements of deterioration. If, on the other hand, wear and breakage are the main causes of deterioration, and the depreciable properties are protected from corrosion and decay through adequate maintenance, there will be little or no deterioration dur-

ing periods when the plants are idle, but normal obsolescence will proceed whether or not the plants are in operation.

Most industries will be able to ascertain a certain percentage of rated plant capacity which is a normal rate of production. A statement of adjustments to normal rates of depreciation, which will be reasonable as the rate of production departs from the normal, will be desirable in connection with the straight-line basis of depreciation if any deviation from the theoretical method is advisable. When the unit-of-production depreciation method is employed, it is desirable to state the basis which should be substituted for depreciating idle assets, for which no depreciation is provided by the theoretical method.

### Maintenance in Relation to Depreciation

Maintenance is here defined as including both repairs and replacements. Repairs arrest or lessen deterioration on account of wear and decay. The regulations recognize that this is true, and state that in estimating the allowance for depreciation "Due regard must . . . be given to expenditures for current upkeep," but that "property kept in repair may, nevertheless, be the subject of a depreciation allowance." (Articles 161 and 163, Regulations 69.) "The cost of incidental repairs which neither materially add to the value of the property nor appreciably prolong its life, but keep it in an ordinarily efficient operating condition, may be deducted as expense, provided the plant or Property account is not increased by the amount of such expenditures. Repairs in the nature of replacements, to the extent that they arrest deterioration and appreciably prolong the life of the property, should be charged against the depreciation reserve if such account is kept." (Article 104, Regulations 69.) Approved procedure with item accounting for replacements consists in taking the cost of the replaced part out of Property account, taking the depreciation set up on the replaced part out of the depreciation reserve, writing off the undepreciated cost of the replaced part less realized salvage as a loss, and adding the cost of the new part to Property account. It is only the cumulative effect of wear and decay that necessitates repairs and replacements. Repairs and replacements are periodic, while wear and decay are constant. It is generally true that current deterioration is less when repairs and partial replacements are

made than when they are not made, and that in some cases the extent of deterioration may be entirely arrested by repairs. Yet, at times, it is possible that a physical property may be rejuvenated by repairs which counterbalance wear and breakage; that it may be maintained at 100% of its initial productive efficiency; that it may be entirely protected from corrosion and decay by means of repairs; and that it may still depreciate steadily in useful value on account of gradual improvements in more modern types of similar depreciable assets, or on account of growing inadequacy to the needs of a particular business, or on account of changes in style or custom.

It is also possible that a very small deterioration in usefulness is sufficient to cause the replacement of a depreciable asset, either because it becomes unsafe, or because it causes a loss of time which is disproportionate to the cost of a replacement, or because the use of a newer type of the same asset will yield a sufficiently greater profit to pay the additional depreciation and interest charges which its installation would necessitate.

With depreciable assets or long life which have been in use for a number of years, the repair and maintenance charges for the aggregate depreciable assets employed in the business may be approximately constant, but it is probable that more repairs are undertaken in periods of business depression than in periods of unusual business activity. If depreciation is charged in equal annual amounts the combined charge for depreciation and repairs will be insufficient in times of business activity both because wear is greater and because repairs are less extensive. The reverse is frequently true for periods of inactivity in business.

The cost of maintenance will almost invariably be at the minimum when a depreciable asset is new and will increase progressively as the asset ages. If there is a fairly constant proportion of new to old items in the total property subject to depreciation, the repair and maintenance costs will also be rather uniform in annual amount, but for properties composed entirely of new or of old items, the variance of maintenance costs with age of assets is a matter for serious consideration.

The Bureau of Internal Revenue desires but does not require that normal maintenance costs be determined in connection with the determination of the normal useful lives of depreciable assets. It will be preferable to have normal costs of maintenance deter-

mined by items or classes of items, but, in the event that the accounting records of an industry do not permit such detail, the statement of maintenance costs by departments of the industry will be very helpful.

Current costs for the same amount of repair and maintenance will vary with current economic conditions as reflected in wage and price levels. If normal maintenance costs are determined as definite amounts or as percentages of the first costs of the depreciable assets to which they apply, the price and wage levels should be indicated for which the stated amounts of maintenance are normal. A more desirable method would be to state normal costs of maintenance in terms reflecting current variations in economic conditions.

It is believed that the costs of maintenance in most industries will be found to be a fairly uniform percentage of total operating costs, or to vary proportionately with some item of the total cost such as the labor or the supply cost, dependent chiefly upon whether labor or supplies constitute the principal cost of maintenance, or whether both exercise approximately the same degree of control over costs of maintenance. If the relation of maintenance to total operating costs or to items of operating costs can be determined for an industry, it would be possible to determine with reasonable accuracy whether maintenance charges for an individual taxpayer of the industry have been normal or abnormal in any year regardless of the amount of such charges.

In the event that normal maintenance standards cannot be established by an industry, individual taxpayers of that industry may avail themselves of the opportunity to establish individual standards for maintenance which may be used for the adjustment of amounts of depreciation during periods when maintenance charges are abnormal.

### **Combined Depreciation and Maintenance Accounts**

Division of maintenance expense into current expense and capital accounts is a troublesome problem of accounting. The determination of a rate of depreciation sufficient to provide, not only for the amortization of the cost of a depreciable asset at the end of its useful life, but also for the maintenance of that asset during

its useful life, might be desirable. All costs of repairs and replacements would be paid from the depreciation reserve should such a rate be used. A combined charge for depreciation and maintenance would be but a portion of the rental for a depreciable asset, such as the machine-hour rental charge to each job for the use of each asset which is gaining favor with cost accountants in many industries. Repairs of almost any nature add to the value of an asset, and the payment of repair charges from a depreciation reserve is not necessarily a combination of current expense and capital accounts. Theoretically, the charge per unit of use for a depreciable asset should be a proportionate amount of the total cost for the use of that asset during its entire useful life; and the elements of repairs, replacements, and depreciation including obsolescence, are all portions of that total cost. A combined charge for depreciation and maintenance per year, per unit of product, per hour of use, or for any other recognized unit of measure, would necessarily be adjusted from time to time with changing economic conditions. The Commissioner of Internal Revenue does not require but has authorized the study of combined charges for depreciation and maintenance when, in the opinion of any industry, such a study is desirable, with the object of ascertaining whether or not such charges can be determined with sufficient accuracy for use in connection with income tax returns.

### Summary

By authorization of the Commissioner of Internal Revenue, studies of depreciation are being undertaken by the Bureau of Internal Revenue in coöperation with nationally representative organizations of industry. The scope of any study will be determined by the industry making the study, but minimum requirements are a statement of useful life in years by items or classes of items used in the industry, together with a statement of accounting policy in connection with depreciation matters. Optionally, with any industry, the scope of a study may be enlarged to include related subjects such as maintenance costs, or combined rates for depreciation and maintenance. Each industry coöperating with the Bureau of Internal Revenue is establishing self-regulatory standards for depreciation. These studies were authorized for the purpose of securing equity and simplicity in the audit of income tax

returns, after nearly ten years of satisfactory experience with similar agreements between certain industries and the Bureau of Internal Revenue.

The Commissioner of Internal Revenue believes that, in formulating any policy to be adopted with respect to depreciation, provision should be made for increases or decreases in rates during periods when it can be shown by affirmative evidence that changes in normal rates are warranted.

It is hoped that these studies may lead to conclusions as to practicable methods whereby average depreciation rates may be determined together with normal maximum and minimum rates, with due regard to changing economic conditions, variable expenditures for maintenance, and supernormal and subnormal rates of production and their effect in changing such average rates from year to year.

CHAIRMAN BELL: Are there any questions that any of you want to ask on this subject?

MR. CERF: I would like to ask Mr. Grimes whether the question of locality enters into the determination of these normal rates that you agreed on, and also the question of obsolescence—how that factor would be taken into consideration when it occurs in connection with some individual concern which has some old machinery, and the purchase of new machinery requires them to take obsolescence into consideration, which doesn't come into those rates.

MR. GRIMES: It is generally recognized that there is a reasonable difference in depreciation for some causes. For instance, machinery or steel work in the Gulf Coast region is affected by salt air. In a humid climate, it is generally recognized that any metal work under such conditions will have shorter life than under more favorable conditions. There are numerous other regional differences.

It is expected that any industry concluding an agreement with the Commissioner will state as many of those regional or general conditions as it is possible to state, noting, if possible, the amount of variation from the average.

In respect to obsolescence, there are two types. One is the gradual, cumulative thing, and the other is a sudden, overnight

affair, the invention of new machinery or something of that kind which makes the old type of equipment obsolete immediately. The gradual obsolescence is included in the rate of depreciation, which rate is stated in terms of life in years, thus making no distinction between wear and tear, decay, or gradual obsolescence of plant and equipment. The more rapid kind, which you might call sudden obsolescence, is similar to fire and storm, earthquake, or any other casualty that entails a loss which cannot be predicted. You might separate obsolescence, therefore, into predictable and unpredictable types. The predictable types may be written off as depreciation. The type which cannot be predicted should be taken into account as a loss when the loss occurs. This loss will occur with greater rapidity for some people than for others in the same industry. The loss of one concern may be written off immediately and new equipment installed. Another competitor may figure that one change leads to another, and keep the obsolete machinery in his plant, knowing that it is obsolete, planning to write it off in a year or two if nothing better develops, and then install new machinery.

The loss, therefore, on this sudden obsolescence is more or less an individual matter, and the Bureau believes that it must be handled individually rather than by collective agreements.

MR. PORTER: Some of the public utility companies figure a fixed percentage of gross operating revenue for maintenance and depreciation, which is deducted from the total, and they say the balance is depreciation. I should like to ask whether that method is satisfactory to the Department.

MR. GRIMES: The Commissioner has authorized the use of combined rates for depreciation and maintenance. The main advantage of the use of that rate is that it does not become necessary to charge different items for maintenance to Current Expense and Capital Account. Every expense for maintenance is borne by the depreciation reserve which has been accumulated for that purpose. For a new plant, it is a very desirable thing to have higher depreciation when no repairs need be made in the first years of the usefulness of a plant. For an older plant where the repairs and replacements have settled to a fairly average, normal amount per year, it becomes less of an advantage to use that method. The method, however, is specifically authorized by the Commissioner of Internal Revenue.

MR. BOEHM: I am very pleased to hear about these attempts to establish standard rates of depreciation in various industries. The question as to the rate of depreciation is one of the most mooted questions I have encountered. I know of one public utility that charges off 4% per year on equipment, and compounds that 4% at 6% annually. Figured that way, the average service life is 15.72. They call this average service life sixteen years, because by their method they get back the capital expenditure in approximately sixteen years. Another public utility uses the same method, but charges off 4% and compounds that 4% at 5% per annum. They figure on an average service life of twenty years in this case, because by their method they get back the full capital expenditure in twenty years. I believe the method most generally used for machinery is to charge off 5% or 4% per year, straight-line depreciation, based upon a service life of twenty to twenty-five years.

CHAIRMAN BELL: Is there any other discussion or question? If not, I shall ask Mr. Stevenson to summarize this meeting.

PRESIDENT STEVENSON: It seems to me, gentlemen, that the papers this afternoon have brought out several very important points. The first, I think, and the one on which there is the least controversy, is the absolute necessity of running proper records to keep track of what we ordinarily refer to as our fixed assets. We are all, I think, pretty well convinced of the necessity for keeping track of current assets. We go far in accounting for cash and accounts receivable, for a discrepancy of a penny one way or the other in our balance sheet. Most of us are convinced that we should carry out whatever method is necessary to keep the proper record of our materials and supplies. It has now been stressed this afternoon, and I think most of us agree, that it is just as important to keep adequate records dealing with that part of our capital which is tied up in fixed assets. Exact methods of doing that may differ with different conditions. Methods have been explained here. One very ingenious method was expressed from the floor. I don't know that the exact detail of the method is particularly important, although it is well worthy of consideration and study. The important thing, of course, is to have the records so that you know exactly what you have, what it cost you, and what its present value is, whatever way you may depend upon to handle pretermination.

Another point is the discussion of depreciation and the proper way to charge it, and the suggestion has come from Mr. Grimes of the Department of Revenue, that each of us, inside our own industries, should come together through trade associations with the other men in the industry and determine what the rates should be. That has been done in a number of trade associations, and these rates have been put up to the Department in the way suggested by Mr. Grimes, and are in many cases embodied in the uniform accounting manuals which so many associations have issued.

I am particularly interested in the theory advanced by Mr. Baldwin, that depreciation rates should be charged in fluctuating values. I don't want to take advantage of Mr. Baldwin, being the presiding officer of this meeting and therefore having the last word, but I am sorry to say that I do not agree with him in the conclusion which he has reached and the method which he has suggested for handling it. However, Mr. Baldwin and I could enter into a discussion that would tie us up for the next half hour, and probably feel just about the same as we do now. But, I don't believe there is much to be gained by entering into a detailed discussion of that sort. I think it is a question, though, that each man should think about very carefully. It certainly is a subject which, in my opinion, would lend itself very admirably to inclusion in our chapter programs during the coming year, and perhaps we might arrive at some beneficial results by discussion and comparison of the work which each of us is doing along those lines.

On the whole, I think that this has been a very fine and instructive session. I think we owe a vote of thanks to Mr. Bell for having brought these men together, and to the gentlemen for the time and effort they have put into this, and for the very excellent presentations they have made.

SESSION V  
ACCOUNTING FORUM

THURSDAY MORNING, JUNE 14, 1928

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This Session Was Organized Under the Direction of

C. OLIVER WELLINGTON

Scovell, Wellington & Co., Boston, Mass.

M. B. FOLSOM is a graduate of the University of Georgia and of the Harvard Graduate School of Business Administration. He has had twelve years' experience with the Eastman Kodak Company where he has held the positions of Statistician and Office Manager, and is at present Assistant to the Chairman of the Board.

ERNEST F. DuBRUL is a graduate of Notre Dame University, receiving degrees of A.M., Litt.M., and LL.B. He pursued graduate work in Economics at Johns Hopkins University. He entered business with the Miller, DuBrul and Peters Manufacturing Company, Cincinnati, manufacturers of cigar and cigarette machinery. He then became vice-president of the National Metal Trades Association and Commissioner of that Association. Returning to Miller, DuBrul and Peters Manufacturing Company as vice-president, he became president in 1915. He retired from active business in 1919, but in 1921 was asked to become manager of the National Machine Tool Builders' Association, and has been on that work to date.

J. THOMAS OTTO has been connected with the Cincinnati Milling Machine Company for the past twelve years and is now Comptroller and Budget Director of the company. He has been much interested in the development of analyses and statistics for the benefit of foremen. Mr. Otto studied at the University of Cincinnati. He is president of the Cincinnati Chapter, National Association of Cost Accountants.

F. RICHMOND FLETCHER, after attending Amherst College, became a salesman with the Library Bureau and then a member of their Special Service Department. After this he became President of Cutter, Fletcher & Company, Industrial Engineers and Accountants. Since 1916 he has been a member of the firm of Scovell, Wellington & Company, Industrial Engineers and Accountants. He is a certified public accountant and a member of the National Association of Cost Accountants, the Taylor Society, the Society of Industrial Engineers, the American Institute of Accountants, and of the American Management Association.

HENRY W. MAYNARD was graduated from Cornell University as a civil engineer. After graduation he spent three years in the United States Coast and Geodetic Survey. He then served as cost engineer with the Brown Hoisting Machinery Co. During 1918 he was with the accounts division of the Bureau of Aircraft Production. He then spent three years on the New York staff of Scovell, Wellington & Company, after which he was engaged for one year with the General Electric Company, and for two years was assistant treasurer of the Salt's Textile Manufacturing Company in charge of accounting. Since May, 1925, he has been factory accountant for the Gillette Safety Razor Company, Boston, Mass. Mr. Maynard is a member of the National Association of Cost Accountants and vice-president of the Boston Chapter.

## ACCOUNTING FORUM

**P**RESIDENT STEVENSON: Gentlemen, we now come to our fifth technical session. This session has been organized on a little different basis from the four preceding sessions. Instead of being devoted entirely to consideration of one subject, it will touch on two or three or more subjects which are what might be called controversial, that is, subjects on which there is a decided difference of opinion, some men feeling that the matter in question should be handled in one way, and others feeling that it should be handled another way. We want to explore those questions and have as much discussion as we can, and, in so far as possible, reach some conclusion, although I doubt in some cases if that is possible. At least we want to clear the atmosphere, and have the men holding opposing views meet and discuss the subjects.

The session this morning has been arranged and will be presided over by Mr. C. Oliver Wellington, of Scovell, Wellington & Company, of Boston. It gives me pleasure to turn the meeting over to you, Mr. Wellington.

**CHAIRMAN WELLINGTON:** Ladies and Gentlemen, I am very glad indeed to be here. As many of you know, my partner, Mr. Scovell, was particularly interested in these open discussions at our conventions and conducted several of them. On that account the directors asked me to plan for a similar session this year.

We are dividing the discussions into three main topics, which will each be started with a short paper, and followed by discussions by a few men who have been given the opportunity of reading the paper prior to coming here. Then we wish to have considerable discussion, or as much as time will allow, from the members present.

These subjects have been chosen to take up points of interest on which there are differences of opinion, and we hope the differences of opinion will be brought out. Unfortunately, the lateness in getting together and the business session have cut our time down so that we will have to speed up considerably. I am going to

announce in advance that, if any one is long-winded, I will have to make use of the hammer and cut him short. We must adjourn in time for luncheon and the afternoon session.

Without any further preliminaries, I will introduce the gentleman who will read the first paper on the subject of the use of the thirteen-month calendar as contrasted with the present twelve-month calendar. Mr. M. B. Folsom, of the Eastman Kodak Company.

Mr. Folsom then presented his paper.

## THE USE OF A THIRTEEN-MONTH CALENDAR

M. B. FOLSOM

Eastman Kodak Company, Rochester, N. Y.

### Defects of Present Calendar

**T**HERE are many defects in the present twelve-month calendar, but, considered from the business point of view, the two principal defects are: (1) the variation in the number of days in the month, and (2) the fact that the month is not a multiple of the week. There is a variation of 11% between the length of February in ordinary years and the length of a 31-day month. There may be a variation of 19% in the number of working days in a month—between 21 days and 25 days. A variation of this extent in a unit which is used as a base for the great majority of reports compiled in business is obviously a serious defect.

There is another factor which complicates it further. In most lines of industry and commerce the individual days of the week are not of the same value. The best illustration is that of a factory which works only half-days on Saturday. Comparisons between months of five Saturdays and months of four Saturdays are obviously inaccurate. If production in a certain plant were uniform throughout the year 1927, the monthly output in March would show an increase of 19% over February, April output report would show a decline of 6% from March, and the May report a decline of 8% from March. If no adjustments were made for these variations, the plant manager would obtain a false impression of the state of his business.

Take the hotel business as another illustration: Thursday is

the best day of the week for the hotel business, the average receipts on Thursday equaling 18% of the receipts of the week, while Sunday receipts are only 7%, and Saturday receipts 10% of the receipts of the week. This variation in the number of the days in the month and the difference in the value of the days of the week causes quite a fluctuation in the value of the months of any one year and also in the value of corresponding months of different years. Using 1926 as an illustration: If January were considered as 100, February would have a value of 93.5, March a value of 106.5, April 102, May 100, etc. If the hotel manager made no adjustment for these variations, he would get a wrong conception of the course of his business. He would probably make allowance for February, but it is doubtful whether he would make allowance between March and May, for instance. If no allowance were made and if his business were uniform during the year, he would get the impression from the monthly report that the business had declined 6% from March to May and that it had increased 14% from February to March.

The second defect is that there may be four weeks or five weeks in a month. All accountants are familiar with the split-payroll difficulty and with the erratic course of the burden and cost statements owing to the fact that some months have five paydays and others only four paydays. This variation in the number of paydays upsets comparisons not only between months of the same year but also between corresponding months of consecutive years, because the month does not always have the same number of paydays in different years.

It is obvious from the few illustrations which have been given that, if adjustments were not made for the variations in the number of days and the number of weeks in a month, all monthly reports would be misleading, and inaccurate comparisons would be obtained. If adjustments are made, additional clerical help is required.

Several methods have been used by accountants to overcome these defects in the present calendar, the two principal ones being: (1) the use of four-week and five-week months, and (2) the use of thirteen periods of four weeks each. A study of these two plans indicates that the latter method has more advantages and fewer disadvantages than the former. In this paper it is planned to describe the experience of concerns who have been using the thirteen-period calendar for their internal records.

### Thirteen-Period Calendar

Under this plan the year is divided into thirteen periods of four weeks each, each period consisting of 28 days. Except for holidays, the periods are of the same length and are, therefore, comparable without adjustment. Thirteen months of twenty-eight days account for 364 days, leaving one day over in ordinary years and two days over in leap years. Thirteen is not divisible by four, hence thirteen periods cannot be grouped into quarters having an even number of whole periods. Many concerns, nevertheless, have adopted the thirteen-period calendar for their records and accounts and some concerns have used this calendar for over thirty years.

### Survey of Forty-eight Concerns Using the Thirteen-Period Calendar

In order to find out the experience of these concerns with this calendar, the advantages and disadvantages which they found, and the methods which they used in overcoming obstacles, a questionnaire was sent to a list of over sixty concerns using this calendar of whom we had record. Replies were received from forty-eight concerns.

Some of the concerns from whom information was received are as follows:

Carter's Ink Company, Boston, Mass.  
C. G. Conn, Ltd., Elkhart, Ind.  
Crocker-McElwain & Chemical Paper Mfg. Co., Holyoke, Mass.  
Eastman Kodak Co., Rochester, N. Y.  
Fiberloid Corporation, Indian Orchard, Mass.  
Robert H. Foerderer, Inc., Philadelphia, Pa.  
Fuller Brush Company, Hartford, Conn.  
Graton & Knight Mfg. Co., Worcester, Mass.  
Hearst Publications, Inc., San Francisco, Calif.  
Jewel Tea Company, Chicago, Ill.  
Kendall Mills, Walpole, Mass.,  
Loews, Incorporated, New York City  
Lukens Steel Company, Coatesville, Pa.  
McCallum Hosiery Company, Northampton, Mass.  
Rome Brass & Copper Company, Rome, N. Y.  
Sauquoit Silk Mfg. Company, Philadelphia, Pa.  
Southworth Company, Mittineague, Mass.  
United Press, New York City  
Western Clock Company, La Salle, Ill.

Two companies have used this method of handling their accounts and records for over thirty years, the Western Clock Company, and R. H. Foerderer, Inc.

### **Method of Handling the Extra Day**

Each ordinary year has one extra day beyond thirteen months of twenty-eight days and leap year has two extra days. There are two methods of taking care of these extra days. The first method, which is used by the majority of firms, is the plan of letting these days accumulate and inserting an extra week in the thirteenth period every five or six years. This means that in the fifth or sixth year the thirteenth period will not be comparable with the other periods, and allowance will have to be made for this in comparative statements. This method has an advantage in that the period would always begin with the same day of the week and always end with the same day of the week. Upon inauguration of the calendar a concern can select any day it chooses for beginning the period.

The other method is to include the extra days, or two extra days in leap year, in the last period, so that the thirteenth period of this year, for instance, if the first period began on January 1, 1928, would end with the regular calendar month, December 31, 1928. The 1929 work calendar would then begin the same as the regular calendar, on January 1. This method has the advantage of starting the work calendar on the same date as the regular calendar. The thirteenth period would not be exactly comparable with the other periods under this method, but there would be a difference of only 1/28 in ordinary years and 1/14 in leap years, which should not upset comparisons very much. It has another disadvantage in that corresponding periods of different years begin on different days of the week.

Of thirty-eight companies replying to this question, twenty-two use the method of accumulating the extra day for five or six years then adding the extra week, and sixteen use the method of including the extra day in the first or last period of each year.

### **Method of Handling Quarterly Closings and Reports**

In the thirteen-period calendar the quarter consists of three periods plus one week, the half-year consists of six periods plus two weeks, and three-quarters consists of nine periods and three weeks. This is one of the chief objections which has been raised

against the use of a thirteen-period calendar. Over half of the companies who replied to this question stated that they had done away with quarterly closings and reports entirely, finding them unnecessary. The general practice among these concerns is to issue cumulative reports by periods, having a report, say, of the second period, the third period, the first four periods, etc., getting comparisons with the corresponding periods of different years. If it is necessary to compare the first three periods with the second three periods, this can easily be done, whether this length of time exactly corresponds with the quarters under the regular calendar or not.

The other practice is to have three-quarters of three periods each and one-quarter of four periods. The nature of the business determines in which quarter of the year the extra period will be included. Most of the companies reporting use the first three-quarters of three periods each and the last quarter of four periods. In other companies the second or third and in one company the first quarter has the extra period. In a seasonal business it often happens that the sales in four periods during the slack time of the year would not exceed the sales in three periods during the busy part of the year. In such a business there is then practically no disadvantage in having the extra period included in one of the quarters.

Four of the concerns reporting close their books according to the quarters under the regular calendar. This practice, of course, involves an extra closing and an additional report, but in some cases the quarterly reports may be issued in place of monthly reports.

There is a tendency, however, for concerns using this type of calendar to do away with quarterly reports entirely, and many of those who are using the second method indicate that the number of quarterly reports has been considerably reduced, as they were found to be unnecessary.

### **Extent of Use Within the Individual Concern**

1. **Accounts Receivable and Statements to the Trade.** Most of the companies send their statements to the trade according to the regular calendar. Some companies stated that they tried sending statements by periods, but it was confusing to the trade, who were using the regular calendar, and consequently they have gone back to the regular calendar. Two concerns have been able to send their

statements out according to the periods without causing any difficulty to the trade.

Some concerns stated that, while they were sending their statements out to the trade according to the regular calendar, they closed their accounts receivable ledgers according to the period basis. Their accounts were cumulative and statements would be taken off at the end of the regular calendar month.

2. Handling Accounts Payable. Of thirty-nine companies who replied definitely to this question, ten use the periods in paying accounts payable, and twenty-nine pay according to the regular calendar month. The larger proportion using the regular calendar is accounted for by the difficulty of getting the concerns from whom the materials, supplies, and services are bought to render statements according to the periods used by the individual concern. The ten concerns who are paying their bills according to the thirteen-period calendar have in many cases made arrangements with their vendors to send statements according to their period dates. Several of them have made arrangements with their banks, supplying the banks with the closing dates of their periods, and statements are rendered on these dates and not at the end of the month.

3. Internal Records and Accounts for Both Office and Factory. In answer to the question, "Do you use the Calendar for all internal records, statements, and accounts for both office and factory?" thirty-four out of a total of forty-three answered "Yes." The others said they did with a few exceptions. In some cases the general books were excluded, in some the customers' accounts receivable were closed according to the regular calendar, some companies use it for cost accounting only, and other companies are using it only in their factory and not for the executive offices.

From the replies received on this question, it seems to be the general practice to use the thirteen-period calendar for all the internal records including the general books. Of course, if all the advantages are to be obtained, the application should be universal within the company. Those companies who use it in the factory only will undoubtedly encounter difficulty and confusion from the use of the two systems, because they will have some statements on the thirteen-period basis and some on the regular calendar basis. If the plan is advantageous for the factory, there seems to be little reason why it would not also be advantageous for compiling sales

records and the many other records necessary for the administrative end of the business.

### **Payment of Salaried Employees**

Most of the concerns reporting pay the salaried employees thirteen times a year. There seems to have been little difficulty experienced in putting these employees on the thirteen-period basis, and in many cases the employees were glad to have their pay thirteen times a year instead of twelve. It simplifies the costs, of course, if the salaried employees are on the same basis as the other costs.

### **Difficulty in Introducing the Plan**

In answer to the question, "Did you experience any difficulty in introducing the calendar?" thirty-six companies replied "No." Two companies replied "Little if any." Two companies stated that there was slight resistance within the organization owing to the change in a long-established custom, but this was soon overcome and the people who objected were soon convinced of the advantages. There seems, therefore, to have been very little difficulty experienced in introducing the calendar.

Difficulty will be experienced during the first year in which the thirteen-period calendar is introduced in making comparisons between that year and the preceding year when the statements and reports were compiled on a twelve-month basis. Fairly accurate comparisons can be made between the periods of one year and the corresponding months of previous years, but for more accurate comparisons especially for the periods near the middle of the year it may be necessary to convert previous years to the thirteen-period basis. Of course, the comparisons between the weekly reports of the two years would not be upset nor would the cumulative reports.

### **Advantages**

The outstanding advantage of the thirteen-period calendar is that all months are comparable without any adjustment being necessary for the unequal number of days or the unequal number of weeks as found in the ordinary twelve-month calendar. In the replies to the questionnaire the great majority of the companies gave "Facilitates comparisons as all periods are comparable" as the outstanding advantage. The advantages of "more accurate cost and production records," "elimination of split payrolls," "assist-

ing budgeting." "having every closing on the same day," "having the end of the week coincide with the end of the period," and "the more effective planning of clerical work in closing the books owing to more efficient scheduling" are among the advantages most commonly listed by the companies. The following extracts are taken from some of the replies received and indicate concisely the advantages which these companies have obtained from the thirteen-period calendar.

In establishing a thirteen-month calendar in 1892, the Western Clock Company took a long step forward towards establishing time standardization. In our production, sales, cost, budgeting, timekeeping, etc., the thirteen-month method of accounting has proved invaluable over and over again. The twenty-eight-day month allows for flexibility of accounting. Each month is made up of exactly four weeks, and holidays excepted, the total number of days never varies. Each month is constant, invariable, uniform.

#### WESTERN CLOCK COMPANY

There are people who assume that a change to four-week periods will cause considerable work and confusion at the time it is established.

There is absolutely no foundation to this feeling. From an accounting point of view it is simple. Merely specify the date of closing the several books of original entry and make the postings to the general ledger. The trial balance will automatically give the results of the period, and the financial statements prepared from the trial balance will, of course, reveal the same conditions.

#### THE FIBERLOID CORPORATION

Working as we do on a weekly basis it is much simpler to build up our months or, as we call them, periods, by making them multiples of weeks. With the more even flow of orders from the field and without the difficulty of having extra orders on account of split weeks, we find it a much more simple matter to regulate our warehouses and from there all the way down to our factory production.

Another advantage of the period plan in connection with our office work is the fact that we can schedule our routine on a weekly basis. All the work goes through on a regular schedule and at the end of the period there are no split weeks to handle.

All in all, we feel that the thirteen-period calendar plan has been of distinct advantage to us and that it is one of those things which tends to make business simpler and more effective.

#### FULLER BRUSH COMPANY

The advantages from the standpoint of accounting and statistical comparisons are very many and we have ceased to recognize any disadvantages in the scheme if, in fact, we ever imagined any of importance.

#### CROCKER-McELWAIN COMPANY

From a business point of view, I know of no real objection to the thirteen-period calendar. Having used it in our business for over ten years, I venture to state that no real objections could be found to its universal use.

The success which the Graton & Knight Company has had with this "natural" or thirteen-period calendar enthruses us to wholeheartedly recommend it to others.

GRATON & KNIGHT COMPANY

The advantage of the period system is that you can keep your costs much more accurately, and you can make comparative statements more easily. We believe the matter of the cost system is the most important as it is always difficult to close the books at the end of the month when it comes in the middle of the week, as there are always adjustments to be made, payroll, etc.

SOUTHWORTH COMPANY

Comparable figures on all reports and statistics. More efficient planning of clerical help in closing books, due to definite scheduling of work.

Clear cut distribution of wages by weeks, not requiring division of weekly payroll between two months.

Facilitates building up all accounting records covering reserves, fixed charges, accrued terms, etc.

EASTERN MANUFACTURING Co.

The chief advantage is that it keeps all things in line with the payroll.

ROBERT H. FOERDERER, INC.

Gives a more concise follow-up on sales and purchases. Also found it very satisfactory for Budget Work.

LIBERTY PAPER COMPANY

Even division of the year.

More accurate comparative figures.

Elimination of necessity for splitting payrolls, accruals, etc.

KENDALL MILLS, INC.

Having equal periods for comparison of results shown by all departments both as to production cost, profit or loss, etc.

ROME BRASS, COOPER COMPANY

Uniform periods in comparisons of sales, collections, etc. Elimination of necessity of splitting factory costs to conform to twelve-month calendar.

C. G. CONN, LTD.

Makes closing easier at the end of period instead of end of month, because of even number of days and even number of weeks, period always closes on Saturday.

UNIVERSAL BORING MACHINE Co.

We established the thirteen-month calendar primarily for our cost accounting records and in connection with the installation of a perpetual inventory system. This obviates the splitting of payrolls which in many cases are not accurate. Every closing takes place on a Saturday and is a complete record in itself.

THE CARTER'S INK COMPANY

### Disadvantages

Fifteen of the companies who replied stated that there were no disadvantages. Thirteen companies stated that there were none except that their accounts to the trade and from the trade had to be kept on the twelve-month basis, and they had to follow the rest of the world on certain operations. Other disadvantages mentioned were the inability to divide thirteen into four equal periods, the additional clerical work involved with thirteen periods instead of twelve, and the addition of an extra week every five or six years.

The following is quoted from the several replies indicating the nature of the disadvantages which have been experienced:

Not commonly used, which requires all contact with customers and vendors on twelve-month calendar. Interest on bank deposits, call loans, and like investments credited to account twelve times per year, which results in the Income Sheet showing no such income during one period.

CHAMPION-INTERNATIONAL Co.

More closings per year. More clerical work. Comparisons with other companies difficult. One period each year, no bills paid and discount feature abnormal. Shoe business seasonal.

LOUIS A. CROSSETT Co.

The only practical disadvantage comes in sending out customers' monthly statements rather than periodically.

EASTERN MFG. Co.

Have experienced none of any consequence. Probably involves a little additional expense in clerical work due to the one extra closing of books.

THE SANYMETAL PRODUCTS Co.

No disadvantage whatever, except harmonizing our thirteen-period year with the twelve-month year in dealing with our customers and suppliers. This disadvantage is very slight indeed, and would disappear of course with uniform adoption.

THE ROOT COMPANY

Balance must be proved with Control accounts for Accounts Receivable and Accounts Payable at the end of each month in addition to the ending of the periods.

POOLEY COMPANY

Once in about every five years we have a five-week period which causes some little inconvenience in making periodical comparison.

TASTY BAKING COMPANY

Inability to divide the thirteen periods into four equal quarters. Lack of uniformity in period endings in comparing statements with concerns using twelve monthly periods.

LOEW'S INCORPORATED

Other concerns send their statements at the end of the month instead of at the end of period.

UNIVERSAL BORING MACHINE CO.

We have yet to learn of any disadvantage that may be chargeable to the use of the thirteen-month calendar. It has been employed very satisfactorily for ten years and surely in that length of time if there had been disadvantages they would have shown up by this time.

THE CARTER'S INK CO.

We are obliged to keep separate records for the periodic distribution of rent, taxes, insurance, etc. With the universal adoption of the thirteen-period calendar, these objections would be eliminated.

JEWEL TEA CO., INC.

It is evident from the experience of these companies that practically the only disadvantage experienced is in connection with having two calendars. All of these disadvantages would disappear should the thirteen-period calendar be adopted universally. It is surprising to note that only two companies mention the disadvantage of the inability to divide thirteen into four equal periods. Only three mentioned that there was additional clerical work involved, and two of these stated that the advantages far outweighed the additional clerical work involved.

The experience of these companies who have actually used the thirteen-period calendar would, therefore, indicate that the universal adoption of the thirteen-period calendar would be a distinct advantage to the business world in general and would involve only slight disadvantages, if any.

## The International Fixed Calendar

Last year the National Association of Cost Accountants went on record endorsing the International Fixed Calendar. The following is quoted from a letter received from Dr. S. C. McLeod, Secretary:

At a meeting of the Board of Directors of the National Association of Cost Accountants held on Thursday, April 21, 1927, the question of Calendar Reform was considered. Every member of the Board present expressed himself individually as being in favor of the proposed reform of the calendar into thirteen months, and a resolution to this effect was adopted.

Our Board is strongly in favor of this movement. We would be glad of the opportunity to contribute toward its accomplishment, but we believe that it ought to be organized on the broadest possible basis and in such a way as to remove any possibility of its being exploited by any individual for his personal profit.

The International Fixed Calendar consists of thirteen periods of twenty-eight days each, the thirteenth month to be inserted between June and July. The extra day in ordinary years is taken care of by inserting a day between Saturday, December 28, and Sunday, January 1, dating it December 29 but giving it no weekday name. This would be considered either as an extra Sabbath or an extra holiday. Such a day would also be inserted in leap years as June 29 between Saturday, June 28, and Sunday, July 1. In this way the objection of having to add an extra period every six or seven years, as experienced by several concerns, would be overcome. The period would always start with Sunday, the first, and end with Saturday, the twenty-eighth.

A referendum was conducted by Mr. George Eastman, an advocate of this calendar in 1927, to a thousand typical business men and leaders in other fields of work last year. Of the 600 replies which he received, over 90% were in favor of the International Fixed Calendar.

It seems pretty well established that the business world in general would look with favor upon the universal adoption of the thirteen-period calendar. The actual practice of concerns who are using the thirteen-period work calendar in their business, especially those who have used it for many years (some over thirty years) is conclusive evidence of the advantages which such a calendar would have to business. Practically all the disadvantages which

these concerns have experienced would be overcome if this calendar were adopted universally.

In addition to the advantages from the business point of view there would be a number of other advantages if the International Fixed Calendar were adopted universally. For instance, it is part of the plan to have all holidays on Monday. While this would be of great benefit to business concerns because they would not be forced to close their plants in the middle of the week, which is rather expensive, it would also be a tremendous benefit to people at large, especially to the working people, to have holidays in conjunction with week-ends. It would also be advantageous to every one in home affairs, and to housewives, in particular, to have exactly four weeks in every month, enabling them to budget their expenses on the same basis as their income. They would not have the difficulty now experienced of having some months of only four pay days with which to meet their monthly bills. Another feature of the plan is that provision is made for a fixed Easter—the second Sunday in April; the churches seemed to be in favor of this plan.

### **Present Status of Movement**

It may be of interest to those who favor this calendar to know that there has been distinct progress in the last few years toward its universal adoption. The League of Nations recently asked each country to set up a national committee to look into the question of calendar simplification. The Pan-American Congress at the recent meeting in Havana unanimously endorsed the League's invitation and asked the members to have such a committee appointed. The League presented the matter to the Secretary of State, Mr. Kellogg, and a national committee is now being formed in this country under the chairmanship of Mr. George Eastman. The committee will be composed of government officials and representative men and women from business, religion, and many other fields. The personnel will be announced very soon.

A number of associations in this country have set up committees to study calendar simplification, and it is believed that considerable progress will be made within the next year. It is hoped that the plan will be universally adopted on January 1, 1933.

In many respects the simplification of the calendar can be compared to the introduction of standard time. In 1879 Sir Sanford Fleming, builder of the Canadian Pacific Railway, experienced

such difficulty with the different kinds of time in use in the United States and Canada that he conceived the idea of standard time. In New York City there were six different clock times in use. Chicago had seven varieties. Most other cities varied. In spite of the public confusion and business waste which such a condition forced upon the nation it was argued and widely believed that local noon-times would never be changed. By 1884 the sentiment in favor of standard time was so universal that President Arthur called an international conference. Two years later standard time was adopted by all the leading nations with but one exception. Today that international standard time is in use and has developed great public convenience throughout the world. It is so universal that most people have forgotten that any other time ever existed.

The League of Nations is the logical organization to coördinate the work being done in various countries toward the simplification of the calendar. As soon as the national committees find out the sentiment in their respective countries, an international conference will probably be called by the League of Nations. The conference will decide the plan which should be adopted and the date on which it should take effect. All that will be required then will be to have the necessary legislation adopted by the various countries.

CHAIRMAN WELLINGTON: I have asked two gentlemen to say just a few words about the advantages and disadvantages of the thirteen-period calendar in their own concerns. I shall call first on Mr. F. C. Bennett, of the Fuller Brush Company.

MR. F. C. BENNETT, *Fuller Brush Company, Hartford, Conn.*: We adopted the thirteen-period calendar for a certain definite purpose and not as a fad. Our business is that of sales. Our sales are carried on on a competitive basis. The territory (covering the United States) is divided into six divisions. These divisions are divided into about 50 districts. The districts are divided into about 200 offices, and the 200 offices are divided into about 5,000 groups or blocks.

Each one of these districts, divisions, and offices compete with the other, and for each one of these divisions and districts we offer bonuses. Under the old plan of the regular calendar system, it was almost impossible to distribute these bonuses on a basis equitable to every one. Therefore, it became almost a business neces-

sity for us to establish the thirteen-period calendar with four weeks in every period.

We have some periods as you have heard, where we have five Saturdays and four Tuesdays, and some periods with five Tuesdays and four Saturdays, and each one of them or any one of them would throw us out of balance. Therefore, we established this thirteen-period calendar. We called them periods, and we find that everything works out wonderfully well. We not only find this in computing our sales bonuses, but also in computing our payrolls. We have no difficulty and had no difficulty in introducing this thirteen-period calendar. Every one accepted it as a matter of fact, and we have been working on it for about four years and everything has run along without any trouble whatsoever. There is a little trouble sometimes, perhaps in connecting up our periods with months. That is, we are on a four-week period with ourselves, and with the outside world, we are on a basis of the general calendar. The first two periods run pretty truly to the regular calendar months, January and February, but when it comes along to the eighth period which is made up of the latter half of July and the earlier half of August, there is some little confusion there, but it has never been enough to amount to anything. So, we are thoroughly satisfied with the thirteen-period calendar, and we hope that the outside world will adopt it very soon. We should be very happy to be on good terms with you all.

CHAIRMAN WELLINGTON: Mr. George S. Simmons, of Graton & Knight Company, Worcester, Massachusetts.

MR. GEORGE S. SIMMONS: The Graton & Knight Company has found the thirteen-period calendar very satisfactory from every point of view. After ten years of use, it has become second nature with us to think and speak in terms of periods and not in terms of calendar months. We have discontinued altogether the quarterly report, and compile our statistics period by period, accumulating every three periods.

The advantages through simplification have already been referred to by Mr. Folsom, and they far outweigh the disadvantages if there are any, in the additional thirteenth closing each year. If that produces any extra work in the accounting department, it is so slight that we haven't noticed it at all. The only

irregularity we meet with in the internal working of the system is that once in every six or seven years, the artificial calendar used by the rest of the world gets so far out of line with our more natural one that we have to close the year with the five-week period in order to catch up.

When it comes to contact with outside interests, the situation is somewhat different, but even here it is not as serious as you might suppose. We can still get out customer's statements monthly and reconcile bank balances as of the last day of the month or any other time we desire. The only real difficulty comes in supplying trade associations and similar agencies with monthly figures of production or stock on hand at the end of the calendar month. So, for that reason, the more nearly universal we can make this thirteen-period calendar, the weaker become any objections that can be found against it, and the better pleased all of us pioneers will be.

CHAIRMAN WELLINGTON: I might say that in the accounting of our own firm we have used four- and five-week periods. That plan is not as good as the thirteen four-week periods, but it has the advantage that we are dealing with a large number of people who are still running on the calendar month basis, and our closing is never more than three days away from the end of the calendar month. This is a makeshift that gives the advantage of the exact comparison of either four or five weeks, and obviates the splitting of payrolls and yet is not too far from the calendar month. Such a plan has been adopted by various concerns which, for one reason or another, were not able to change over completely to the thirteen four-week periods. The latter is better, and will undoubtedly come as more people realize its advantage.

Is there any one here who has considered the use of a thirteen-period calendar and has met with objections in his own company and would like to state them at this time?

MR. G. P. LANDWEHR, *The Philadelphia Electric Co., Phila., Pa.*: In connection with the proposed change from a twelve- to a thirteen-month year the element of cost should receive a great deal of consideration. Increased costs must ultimately be borne by your customers or stockholders and may effect the selling price of the merchandise manufactured.

Some lines of business, particularly the gas and electric indus-

try, will be obliged to materially increase their costs for meter reading and billing due to the extra month.

It seems to me that comparison of costs or sales by months should not be such a difficult task under our present calendar basis, for with the exception of February there is only a difference of one day and holidays always remain in the same month, although the weeks may be different. As far as comparisons by months for previous years are concerned, I think every one will agree that, due to rapidly changing business conditions, their value is very doubtful.

My remarks should not be construed as being antagonistic to the thirteen-month year, but have been made to direct specific attention to increased costs.

CHAIRMAN WELLINGTON: Are there any other questions?

MR. JOHN BALCH, *Balch, Funk & Co., Philadelphia*: For the benefit of my friend Mr. Landwehr, I would just like to say it would be very easy to pass additional rates before the Commission compared to raising prices in a competitive business, but the increased expense in most business is absolutely negligible with respect to the thirteenth closing. We found when I was with the Chemical Paper Manufacturing Company of Holyoke, Massachusetts, that the hardest thing was to get people to use their brains and visualize the period. In order to get that part straightened out in the organization, we had calendars made with fillers that could be replaced each year. Orders were given out that the individuals should put away the calendars that they were using on their desks. Every department head and clerk in the organization, every man who had any reporting to do in the factory, every superintendent, every foreman and assistant foreman was given the new calendar and was told to use that in order to visualize the fact that it was a calendar and not an idea. After that, everything went very smoothly in the records.

CHAIRMAN WELLINGTON: I am very glad to have that statement in regard to the Chemical Paper Manufacturing Company of Holyoke. I believe people who have run on the thirteen four-week periods and have wished to get the proper charges for electricity, gas, etc., have done so by making their own meter

readings at the end of the accounting period and setting up the liabilities even if the bills did come for the calendar month.

MR. FOLSOM: I should like to mention one advantage in addition to that just mentioned—the gas company will collect bills thirteen times a year, which gives a little better turnover than on a twelve-month year, thereby offsetting some expense. In fact, the difference might be enough to offset the expense altogether.

MR. MYRTLE CERF, *Cerf & Cooper, San Francisco*: There is something from the consumer's standpoint which should be taken into consideration. On the Pacific Coast, the homes are rented by the month and apartments are rented by the month. There exists therefore a state of mind that will have to be overcome if the thirteen-month period is adopted. Then we have the attitude of the employee who is on a monthly salary. What is it going to mean? He is going to think of the monthly salary he is now getting, and the cut he would get because of the thirteenth period, because he will be receiving the same salary for thirteen months that he now is getting for twelve. Then, too, we are used to paying gas and electric bills once a month. If we have thirteen-month periods, people will find it very difficult to realize they are not paying more than they are now. Telephone service is also on a monthly basis.

I also wanted to ask one question regarding those concerns now having that system in use, what do they do about reports for governmental agencies, for income tax purposes, trade purposes and such as that, which would require the closing at the end of the month?

MR. FOLSOM: The question has been put up to the Treasury Department, and they say that it is all right. In regard to the question of rents, there seems to be a misunderstanding on the part of some people that they will have to pay an additional month's rent if the thirteen-period calendar is adopted. There is no cause for worry on this point, because the Act legalizing the new calendar would have a provision that all payments which have heretofore been made twelve times a year would be changed to the basis of thirteen times a year with the same total annual payment as before. This, of course, covers salaries as well as rents.

F. A. SHARP: There are certain American traditions to overcome. We have a certain amount of sentiment with American historical dates. Are we going to have the Fourth of July or Washington's birthday on some other day in the future? I think there would be a certain amount of objection from the D.A.R. and a few other historical societies.

CHAIRMAN WELLINGTON: Some one mentioned the fact that Washington was actually born on the twelfth of February and not on the twenty-second.

MR. SHARP: What about Lincoln and Columbus?

MR. FOLSOM: If you go to Mount Vernon, you will see the date, February 11, 1732, on Washington's tomb as the date of his birth. In regard to Columbus, all dates prior to 1752 are now out of line, because in 1752 eleven days were struck out of the calendar when the Gregorian calendar was adopted.

In regard to July 4, the actual anniversary of American independence is July 2. The Fourth of July is the date on which the resolution of independence, adopted on July 2, was first published and proclaimed. July 2, under the new calendar, would be Monday.

In regard to the placement of holidays, this is a question which would be determined by each country. Each country would decide whether it would be better to obtain the advantages by placing holidays on Monday or whether they would prefer not to upset the sentimental and historical associations connected with the anniversaries.

CHAIRMAN WELLINGTON: On account of the lack of time, we must cut off the discussion and start on the next subject, which is depreciation on the basis of cost or replacement values as compared with figuring depreciation on the original cost of the assets. The discussion will be opened with a paper by Mr. E. F. DuBrul, General Manager of the National Machine Tool Builders' Association. Mr. DuBrul.

Mr. DuBrul then presented his paper which was given over to a discussion of the specific subject, Why Take Depreciation from Replacement Cost?

## WHY TAKE DEPRECIATION FROM REPLACEMENT COST?

E. F. DuBRUL

General Manager, National Machine Tool Builders' Association

**M**ANY a debate turns out to be a futile waste of breath because the parties to it do not clearly define just what they are talking about, and they do not realize that they are not talking about the same thing at all. Therefore I think it well first, to set out certain points from which I am discussing the question.

The first point is that since this is a Cost Accounting convention my discussion is from the cost accounting standpoint, and not from that of tax accounting, nor financial accounting. If this point be understood in the beginning, it will save time later when some one will wish to rise up and blast me with the statement that the tax law does not permit you to take depreciation on your cost sheets from the replacement basis. Some cost accountants seem blindly to take the tax regulations and the tax auditors as their sole accounting law and gospel and they try to make all their cost accounting conform to these governmental ukases. Some others hold that the tax laws and regulations actually prescribe the proper method of figuring depreciation. I hold that the executive must often cut through certain false assumptions on which the tax law and regulations are based, if he is to get a true picture for himself and his stockholders of the actual state of the business in his charge.

My second point is that from the point of view of property accounting, and of cost accounting, depreciation is quite a different item from the thing called by the same name in tax accounting.

For the tax accounting definition, given by the Internal Revenue Bureau itself, I quote from page 5 of a memorandum concerning depreciation studies undertaken by the Bureau in coöperation with industries.

*The capital sum to be replaced by depreciation allowance is the cost (or other bases recognized by the Revenue Acts) of the property with respect to which the allowance is made. Changes in market value, other than those resulting from exhaustion, wear and tear, or obsolescence, are not accepted as a basis for determining deductions for depreciation. That*

is, an investment in depreciable property is regarded by the *Bureau of Internal Revenue* as a prepaid operating cost, returnable through deductions for depreciation over the useful life of such property.

Now I ask you to note that the tax law is not concerned with the actual property, but only with a capital sum of dollars. That sum is not always the cost. I ask you to note that the law itself makes an exception to its general rule of cost, in case of assets acquired before March 1, 1913, so the cost basis is not absolutely sacred even in tax accounting, and the value basis is dimly recognized in that particular. I also ask you to bear in mind that the Bureau regulations are concerned solely with the determination of a tax levied on what the law calls income. In its definition of income the law is in economic error, but the taxpayer can't help that. He must pay the prescribed tax. But the law does not compel him to keep himself in economic ignorance, nor does it prevent him from keeping any records that he may find advisable to use for his own economic enlightenment. I stress this merely to prove to this audience that I know what the Bureau is talking about. In similar discussions, I have always found some men who assume the contrary, and I find it necessary to take this time for explanation, in order to save time that would be wasted later in futile debate. So if I take this extra time now I will save much of your time later.

How does tax law depreciation differ from that which the business executive and the economist call by the same name? Simply in that the tax law, for its purposes alone, of course, deals with the capital sum paid out for depreciable property while the business men and the economist deal with the property itself, which is the real capital. They recognize that the dollar marks on the books showing the capital sum paid for the property are mere symbols representing the property. They are mere historical records which were true at the time of purchase.

At that time, and for only a short time thereafter, the records truthfully show two things. First, they show the dollars paid for acquisition. Second, the same figures showed the value of the property at that time. But these once true records remain true only as to one element which they truly recorded, namely, the original cost of the property. Concerning the value of the property there is something at work all the time that insidiously falsifies these records without any one tampering with them.

That falsifier of once true records is the changing purchasing power of the dollar. If the dollar were a stable measure of value the records would retain all the truth they had on the day of acquisition of the property. But the cold fact is that those records do not show what the property is worth for very long. And that I hold to be a very vital fact for executives and owners to know.

Whether this change in value concerns the accountant or not depends on one's view of the accountant's real function. If his function is only to record dollar incomes and outgoes, the changing values of the property are none of his affair. That makes the accountant a mere cashier. But if he is to tell the stockholders what their business is really worth, and how much true profit or loss the business is making, recording these changes in value is a very important part of the accountant's job. It is regrettable that not many accountants think it to be part of anybody's job. But I hold that the mere record of incomes and outgoes is only a small part of a real accountant's function, that a more important part is to record changes in values of the property owned, to show all the sources of those changes so that executives and owners know where they stand. If I am not talking of the job of the accountant at all, let us leave him out, and say that I am talking of the job of the superaccountant of a future day. Even so, this discussion may serve to stimulate some men here to qualify for that superaccountant's job. By whatever name you call him, it is somebody's job—particularly in large corporations. The larger the interests involved, the more necessary is this job. It is also very regrettable that not many executives are as yet awake to the need of this information. As far as I know only 3% of our Association's membership of 126 machine tool builders are awake to it. That, I believe is a high percentage compared to other industries.

My next point is that since the object of undertaking a business is to make profit, the records should show whether the business is attaining its object, and to what extent. I define that profit as a surplus left over after all costs have been met. I think it self-evident that a company's surplus does not consist of book figures, but that actual surplus always consists partly of physical goods and partly of purchasing power command over other physical goods. For accounting reasons, these are both reduced to dollars as a convenient measure of respective values of property and claims in a common unit.

My next point is that in view of the very different purchasing power that the same dollar mark represents in accounts, it is a very tricky measure to go by when measuring the value of fixed assets, bought at different times. It is every bit as deceiving as if one used a rubber tape line, duly marked off in feet and inches, to measure different lots of cloth bought at different times. If one lot were measured with the tape stretched to its limit, while another were measured with the tape fully relaxed, the foot and inch marks on the tape and the book record of those marks would be quite deceiving as to the actual amount of cloth on hand. To get accurate results, measures of weight and length must all be calibrated, and to tell the truth, in accounting, the same principle of calibrating must be applied to the measure of value, the dollar.

Now curiously enough, business men do calibrate their dollar measurements of depreciation and value when they insure values against loss by fire and other causes. We take out insurance to protect the present value of the capital invested in insurable assets, in case those assets are suddenly destroyed or damaged by fire. When we figure depreciation we try to measure what is a more certain, but slower destruction of utility than the fire hazard we can insure against. If we could find insurance companies who would underwrite the depreciation hazard, as companies now underwrite the fire hazard, we probably would be glad to pay them premiums to do this very thing. We have no such companies, so we do our own underwriting through a Depreciation Account. But, on the whole, manufacturers' cost accountants are very poor actuaries in figuring their depreciation premium.

The depreciation charge is exactly the same sort of charge as the insurance premiums. The depreciation charge should be large enough to provide funds enough to replace the productive utility gradually being destroyed by wear-out and normal obsolescence.

An insurance policy is a business contract, providing that in consideration of a specified premium and under certain conditions, some cold-blooded insurance company will pay over to the insured a certain sum of money. By the terms of the contract, the recognized measure of the loss is the reproduction cost, less depreciation, of the asset destroyed. That is the business way of measuring value and depreciation. It is not the way of tradition-bound accounting theory, and it is not the tax way. Neither party to an insurance

contract dreams of merely replacing the capital sum of original cost.

The insurance company is not in the least concerned with the original cost. It does not matter to the insurance company if the property were acquired at a price that was either much below, or much above its present reproduction cost. If the insured were foolish enough to pay premiums on an amount in excess of the property's insurable value, all that he would collect would be the reproduction cost, less depreciation, and he would lose the excess premiums he had paid.

On the other hand, if the insured were foolish enough not to insure to the full amount that the insurance company would underwrite, he would simply stand to lose the difference in case of loss. If his policies contain a co-insurance clause, he would find himself heavily penalized in case of fire for not insuring up to the percentage of full sound value that the policy specifies he should carry.

Now, taking insurance on that basis is generally recognized to be good business policy. Wise creditors insist that for the protection of their equities, their debtors shall carry insurance on that basis. Wise owners and managers do so in order to protect their investment; to keep their capital unimpaired in case of partial or total destruction in a short time by fire.

Assume that the acquisition cost of the assets was lower than the sum for which a cold-blooded insurance company will insure them. I doubt if there is a single accountant in this room who would say that it would be quite sufficient to insure only to the acquisition cost. I do not think any of you would say that you should not insure up to reproduction cost, because after a fire you would not replace the building or machine destroyed with an identical one. If some one should tell you that about insurance you would think he had a screw loose in his thinking apparatus. But it is a common argument to advance against depreciation from a replacement basis.

I believe all of you would say that you should take all the insurance necessary as a matter of mere prudence. I think you would all agree also that it is foolish to pay for more insurance than can be collected in case of fire, even though the asset cost more than its present reproduction cost. If that is logical in insurance why is it not logical in depreciation?

I think also that every one of you would charge all insurance premiums to Cost of Production. You would not say that only

premiums covering acquisition cost are properly chargeable to cost, and that premiums covering additional appreciated values should be deducted from profit as being no part of cost.

Now if all that is good cost accounting when it comes to insurance against an uncertain contingency of rapid destruction of property, by what mental twist do men arrive at the conclusion that these very same charges are not good business when it comes to measuring the certain event of slow destruction of property that is sought to be measured by a depreciation charge to cost? They lose sight of the cold fact that the depreciation charge is a sort of self-insurance charge.

I think every man in this meeting will agree that the necessity for providing funds to replace the physical property is a cold business fact. Perhaps you will say that this provision must be made out of surplus if replacement cost is higher than original cost. You will perhaps say that part of the surplus should be earmarked as a reserve to take care of this replacement. In that case, you admit that the owner must have gotten from his customers tax depreciation plus earmarked surplus, plus tax on earmarked surplus, all enough to equal replacement cost; or else the owner will not have the same purchasing power to invest in the replacement as he had in the beginning. And when you finish, you merely admit that my rose by your name smells just as sweet as it does by my name.

You will perhaps admit the executive must make some allowance in his price for higher costs of replacement. If you think your own work is worth while, you will also admit that if the executive is to make such an allowance rationally, somebody ought to allocate all such allowances to different products, production centers, operations, or what have you, just as you do overhead. In that case, I'm willing to meet you half-way. If you are dead sure to get this allowance plus the tax on it, if any, into the executive's price, I don't care what you call it, so long as you don't tell the executive it is profit—which it isn't. If you make sure it is not overlooked in making prices, I don't care by what name you call my rose, as long as you don't call it "Profit."

Now this brings up another point. Even though Congress insists on passing such foolish laws, should we foolishly persist in trying to tie up perfectly sensible cost accounts with perfectly senseless tax accounts? Why not give up that folly? You can keep

one set of perfectly straight tax accounts that comply fully with the tax laws, and tell all the economic lies that the laws require or permit. They don't need to be very complex to do that. But that does not prevent you from keeping another set of records that will tell owners and the management the actual truth, of actual costs, actual property values, actual profits, or actual losses. As a stockholder I'd like to have that information. I'd like to see it given to all managers of companies in which I hold stock, because it would surely wake some of them up, and some of my stock investments would benefit by the awakening. I would also like to see such information given to all managers of companies competing with those in which I own stock. It would make them all less likely to indulge in "Profitless Prosperity," at the expense of the stockholders.

Sound practice demands that we take price changes into account when we insure property, so should we take them into account when we figure earnings and depreciation. The bigger the business, the more necessary it is that its managers and stockholders know that its real earnings are neither overstated nor understated.

Unfortunately for accounting, in its most prevalent present practice, the typical practitioner has not realized that in some respects accounting theory does not square with economic facts. He does not recognize that in his books of account he is trying to make the same dollar record represent four different functions which the dollar performs at different times. These functions are:

1. To act as a measure of value and as a medium of exchange, in buying and selling;
2. To act as a measure of value of goods in possession;
3. To act as a store or warehouse of value for the time elapsing between exchanges of goods;
4. To act as a valid tender in payment of debts.

Now it is only in the first and fourth functions that the dollar actually serves its purpose without question. But even in the fourth, the parties to a loan or debt transaction may be unconsciously deceiving themselves. For a lender actually lends purchasing power, and a borrower has use for a loan only because the funds borrowed have power to command the delivery of other goods. So, if neither borrower nor lender choose to make the transaction in terms of

purchasing power or goods, and both are content to make it in dollars, they thereby accept the consequences of their own acts, no matter how serious these might be to either of them when the loan comes to be repaid.

As to the third function, the dollar is a satisfactory enough warehouse of value when only a short time elapses between transactions. But if prices are rising, this warehouse has a way of leaking out some of the value stored therein. If prices are falling it has a way of absorbing value from the outside, and getting more into the warehouse than it contained when the current owner took possession.

Now the second function, that of measuring values of possessions, is also fairly satisfactory only in the case of goods that remain in our possession for a short time. When it comes to measuring values of assets of long life or possession, the dollar must be calibrated for current purchasing power if it is to express actual values. If and when it does not greatly change in purchasing power, lack of calibration does not make much practical difference. But if and when changes in purchasing power are considerable, then calibration becomes all the more necessary in measuring the values of long-lived physical assets.

The trouble with traditional, muddy thinking accounting theory is that it assumes the dollar to be equally accurate at all times as an uncalibrated measure of value of long-lived assets. It assumes that if the cost of such assets in uncalibrated dollars is replaced through depreciation that the actual capital is thereby replaced to the only extent that need concern the owner of the physical property.

Now how does this affect the owner of the property? If acquisition costs are lower than reproduction costs it deceives him by producing a falsely low cost figure and an overstated profit figure; or an understated loss figure, as the case may be. But if the acquisition costs are higher than reproduction costs, this fallacious accounting theory deceives him by producing a falsely high cost figure, and an understated profit (or an overstated loss). In neither case does the owner get a true statement of the economic facts of the actual value of his property; of the actual value of the productive utility used up in production; of the actual loss or gain realized in his operations; nor of the change in the money measurement of these items.

Of course, if these things are of no importance, then we need not bother about them. But when the general price level was only slowly rising between 1902 and 1910, in these eight years it rose 25% over 1902—better than 3% a year. This was fully as much as most accountants would allow for depreciation of good buildings. Then from 1915 to 1920 the general price level rose 120%, or 24% a year. This was about eight times as much per year as most accountants would allow for depreciation on good buildings. Then during 1921 the general price level fell 35% below the 1920 peak; say eleven times as much as the usual depreciation allowance on buildings.

These stubborn facts indicate that conditions of value do change in spite of any accounting theorist's blindness to such changes. They indicate that even in times of slowly changing prices these changes have been fully as important as a common depreciation allowance; and in times of rapidly rising or falling prices these changes have been from eight to eleven times as important as the depreciation allowance usually taken on buildings.

Now that business executives are becoming awake to the importance of taking these changes into account, it is certain that more and more of them will demand what some few have already gotten, namely, accounting service that helps management by producing business facts, and not accounting fairy tales.

CHAIRMAN WELLINGTON: We certainly appreciate this clear presentation of the advantages as given by Mr. DuBrul. I will ask Mr. J. Thomas Otto of the Cincinnati Milling Machine Company to say a few words as to the results obtained in his company from the use of such a plan. Mr. Otto.

### WHY DEPRECIATION SHOULD BE FIGURED AT REPLACEMENT VALUES

J. T. OTTO

Cincinnati Milling Machine Company, Cincinnati, Ohio

**A** GREAT many accountants are of the opinion that once a certain means has been provided for performing certain operations, it is unholy, unethical, or an open acknowledgment of wrongdoing to turn about face, just the same as declaring two and

three are four. Depreciation should and must be figured from replacement value in order to provide for the disposal, destruction and eventual replacement of assets. It must be done in order to present actual costs of product. For all product produced in a plant each day there are incurred the wages paid producers, the wages paid non-producers, expense of supplies, interest on investment, etc. All of these items I can lay on the table and ask you to come up and view them, and you will all agree with me because you can see them.

There is still another factor, that of depreciation. A great many of us are inclined to view it in about the same light as we do a sleight-of-hand performance—now you see it; now you don't! Let me show you a concrete example. Here is our plant in which we have been operating for 40 years. This plant includes buildings, machine tools, furniture and fixtures, etc., all recorded on the books at cost of acquisition. Depreciation has been figured and included in cost on the basis of a percentage of cost acquisition. All this is very well, but suddenly there is a need for another building and more equipment to produce the same product that was produced in the old building. The cost of these new buildings and equipment is 50% higher. This means that depreciation figured on cost of acquisition is higher and costs do not compare between the two plants. It appears, therefore, that the old rule of figuring and handling depreciation does not hold water.

Now to analyze this further—What is the idea of using depreciation? It is this:

1. To provide for the eventual replacement of an asset.
2. To recover from the sale of our produce that portion of expense known as depreciation, in order to enable the factory to function when that asset becomes worn out by replacing it with new. This can only be done when you have the money to buy it at its present value—not what you paid for the old asset.

Mr. DuBrul has come up here and tried to tell you there has been a very great increase in the value of the dollar. I came to New York with the idea that he was all wrong on that, but last night I went out and was convinced he was dead right. I bought a chicken sandwich that ordinarily costs 50 cents and paid \$1.75 for it here, so there must be some change in the value of the dollar.

Here is our plant in which we have been on the go for forty years. This plant included buildings, machine tools, furniture and fixtures and so forth, all recorded on the books at cost of acquisition, etc.

I don't believe that any of you fellows can visualize the fact strong enough that you must use depreciation on replacement value until you get into the same position that we got into when we opened a new plant and bought new tools and then began to compare cost. That is, it would have been that way if we hadn't been using depreciation on replacement value on the old plant. At home in our own plant, I do not ask anybody there to do anything that I wouldn't personally do. In coming before you today and asking you to use depreciation on replacement value in order to get a true cost, I am not asking you to do anything that I would not do myself. Thank you.

CHAIRMAN WELLINGTON: I should like to have Mr. Couchman say a few words on the matter. He has been provided in advance with a copy of Mr. DuBrul's paper. I am not sure whether he will agree or disagree.

MR. C. B. COUCHMAN, *Crockett, Couchman & Crawford, New York*: Mr. Chairman, Ladies and Gentlemen, you cannot imagine how downcast and humble I feel, for I will have to admit that I belong to that class of beings called "accountants." And after that scathing arraignment given by Mr. DuBrul, I am sure none of us will be able to hold up our heads again.

I have been asked to spend five minutes in discussing the points in which I differ from the last speaker. Therefore, I will use no time in noting the points wherein I fully agree. First, the speaker apparently does not believe that accountants have even given thought to the subjects which he proposes, that they have any knowledge of economics, or are aware of the temperamental fluctuations of the dollar. This is a great disappointment to me as I had fondly thought that some of us did think a little about the above subject matter, that some of us had at least a smattering of economics, and I am sure we have experienced some of the results of the erratic tendencies of the dollar. The second point of difference and perhaps the more important is with regard to the function of accountants and the further fact that accountants for many years

have given consideration to the very point which forms the basis of the speaker's argument and have endeavored to find some method whereby a recognition of the fluctuating dollar can be given in financial statements without producing unsound and distorted results. It is doubtful if a satisfactory answer to this will be evolved until the economic laws which control such fluctuations shall have been more fully mastered and until their effects can be more correctly charted and anticipated than has yet been successfully done even by the most expert specialist in the field of economics.

Thoughtful accountants realize and admit that accountancy is not a perfect science. Much development and many improvements will accordingly be made year after year as we approach nearer to the goal we have before us. However, accountants must not leap too hastily to new and proposed changes until they have weighed carefully the soundness of such changes and are assured that their adoption will not lead to absurdities. Neither can anything worth while be gained in real advance by the use of recriminatory phrases, nor reference to "blindness" of others, nor to "fairy tales." We must all recognize that the man who differs from us may be just as sound a thinker as we, and he may have very good reasons for failing to accept our viewpoint, just as we have very sound reasons for failing to accept his.

Accountants are not averse to accepting changes and modifications in practice provided they do not result in distortion of the function of accountancy. By long and sometimes tragic experience accountants have learned that their function deals with present and past facts and transactions, not with future possibilities. Some accountants have attempted to be prophets and the attempt has resulted in disaster to the accountants and to their clients.

I have not the time to point out here the inconsistencies that would result if accountants adopted and put into practice in their reports the recommendations of the last speaker. I admit the accuracy of many of his statements, but I am quite sure that he has not thought what the effect would be, and the violations of economic result that would be produced, if they were put into practice as he has outlined. In dealing with expenses the accountant realizes that he must apportion all costs to the periods to which they are applicable, and these costs are represented by moneys paid or obligations to pay money incurred within the period under his review, duly apportioning such costs to the proper periods

representing the service used. The amount of cost charged for payroll for a particular month is the amount actually paid or contracted to be paid covering the services of that particular month. Prepaid expenses representing a service for a longer period of time than the one under review must be duly apportioned over the various periods during which the service is rendered. A prepaid insurance premium covering 36 months of protection is apportioned accordingly to each of the 36 months. The purchase price of fixed equipment, less recoverable value, represents a prepaid cost for an estimated number of months of service. This cost must be apportioned properly to the various months during which the service is received. These periods cannot be charged with a proportion of an estimated amount that may have to be paid in some future years because of the same class of equipment. Accountancy must fundamentally deal with past and present facts and not with future probabilities. To do otherwise would violate the function which we are expected to perform for the benefit of the business world in general.

The cost for a particular period with regard to depreciation does not vary in principle from the other classes of cost charged to that period. To attempt to charge depreciation on the basis of what some future cost of an asset may be would be a violation of common sense. We might just as well apply the same reasoning to other elements of cost. Therefore, why not charge for salaries in one month an amount based upon what we think we may have to pay five years from now for a man to do the same class of work? Why not base our rent expense upon what we think we may have to pay for rental after our present lease has expired? Why not charge as interest in a period, an amount based upon what we think we may have to pay for money ten years in the future? These are just as logical as it is to charge under the heading of "Depreciation" an amount based upon what we may have to charge for depreciation in years to come.

If in 1920 a machine purchased for \$100,000 will render efficient service for 10 years, these 10 years must bear their proportionate part of the prepaid expenses for that machine, as they are the years in which that machine renders its service. If in 1930 it should cost \$200,000 to acquire a similar machine, the years following 1930 and in which the service for that machine is received

will have to bear their proportionate part of that cost. This is sound accountancy, and, I submit, it is sound common sense.

Many speakers and writers on this subject have confused "cost" with an "appropriation of surplus." The two items are quite distinct and cannot be confused without resulting in further confusion of financial statements. If an organization desires to anticipate the purchase of a new machine or of any other such asset, it may readily do so by appropriations from surplus. These appropriations are not expenses—they are merely a setting aside of an earned surplus for certain specific purposes. Therefore, in the illustration given above, the organization if it so desires may appropriate \$10,000 per year from surplus for the 10 years from 1920 to 1930 so that at the latter date it will have charged into expenses the cost of the machine whose service is now exhausted and, in addition, will have appropriated \$100,000 from earnings making up the \$200,000 required for the purchase of a new machine. Such a treatment is in accordance with present accounting practice and is also correct from the standpoint of economics. Had the method been followed of charging profits \$20,000 each year because of depreciation, the surplus at the end of the period would have been misstated by \$100,000.

From the standpoint of the manufacturer who desires to consider reproduction value as a basis for determining the cost of his production the problem is a very simple one. In addition to true cost, namely, the allocation of actual monies expended, he may add an item to represent the proportionate part of the excess of reproduction value over cost. He may, if he so desires, add any other items of a similar nature and arrive thereby at a value which he may use for the purpose of determining sales price or for other purposes he may have in mind. This duly covers the situation from his standpoint, and, with this procedure, the public accountant has no quarrel. However, such additions are for statistical or managerial purposes only, and do not affect the final results for Balance Sheet purposes or for Certified Profit and Loss purposes.

CHAIRMAN WELLINGTON: I certainly appreciate what Mr. Couchman has said, but the time is shorter than it was before. I shall next call on Mr. Fernald.

MR. HENRY B. FERNALD, *Loomis, Suffern & Fernald, New York*: Ladies and Gentlemen, I have just been told I will have

to make this very short, so I am going to give you a few stubborn facts, that is all. First, we keep books in dollars. At least, all the books I have anything to do with are kept in dollars. If Mr. DuBrul is talking about some books not kept with the dollar sign, they are not the same I am talking about or what you are working with. When you try to take into account a whole lot of economic factors that you cannot express by the dollar sign, I say they have no place in the kind of books I want to keep. If Mr. DuBrul can keep another set of books, that is another story. As a matter of fact, I find practically every business man tries to keep in his head a different measure from that expressed by the dollar sign.

If we try to measure in our books, day by day, the fluctuations of the dollar, we must write up and down all our assets, all our surplus and liabilities, for our books must tie down to that dollar sign.

Second, we are not planning to replace our plant and machinery as it stands today. How much of the plant and machinery you are tearing out this year is going to be replaced in kind? The whole foundation of the machine tool business is that you are continually getting better machinery. That is more economics. We are not planning to replace machinery in kind. Remember that. Why should we set up depreciation on a basis of something which we do not expect to do?

I have had occasion to look at many of these insurance appraisals which are made on an inventory basis. In them a machine 10 years old may be compared for replacement in kind as subject to a differential of 25% to allow for depreciation, although no one of us would assign a 40-year life to that machine. That is not the way to figure depreciation in our accounting. We are not paralleling insurance appraisals in our depreciation charges nor can we cover depreciation by insurance premiums. Depreciation charges present a different situation.

I have had to look carefully at this income tax matter. The income tax rulings are not all foolishness. The Treasury Department has faced in the courts this theory of depreciation on replacement cost and has met it with a clear contention which the courts have sustained, viz., that equipment now being used is the equipment we have purchased, and we do not know whether we will ever buy similar equipment. If we do buy it, such a purchase will be for the benefit of the future and not of past production. This

is an argument which we will never be able to answer. I have not heard Mr. DuBrul attempt to answer it. The fact is that we are paying today for what we are using; not for something that maybe at some future date we will buy, subject to every uncertainty as to whether, when we buy it, we will pay more or less than we paid for what we are now using.

Just one other thing: My criticism of depreciation, as ordinarily charged, is not as much as to the difference between replacement cost and original cost, it is that we have not yet been able to solve the proposition of properly taking into our operations the right charge applicable to a given period. We do not know how long the machinery will serve. We do not know how soon we are going to tear it out—not because of anything that happens in our operations, but because somebody else brings out a better machine. When that happens, we want new machines in place of the old ones, so we rip out the old and put in the new.

If any of you will go through plants as I have, and talk with different superintendents and operating men about this replacement idea, ask them what they would replace today. You will find a small portion only of their machinery that would be replaced in kind. If you try to talk to a man about charging him with the replacement cost of that old machinery, he is apt to come back to you and show you that if you are going to charge him up with that amount of money, he wants newer and better and more economical machinery. Very likely before he gets through, he can show you that you really ought to pay him a premium for using the old machinery instead of charging him a penalty on it.

I think it is well worth figuring this replacement cost just for the reason mentioned. I think if you will go through your plant and say to each one of your foremen, "What is the condition of this machinery?" you will find you are using machinery that is a detriment to your business. You will find you haven't been charging enough depreciation in the past, not because of the replacement cost, but because you have not been writing off original cost fast enough to keep pace with the progress of the art.

I believe it is worth while for every plant to give consideration to replacement cost, but do not forget the fact that the books should be kept on a dollar basis. You can make most interesting computations which will bring in all those speculative economic conditions which will follow the fluctuations of the dollar up or

down, and these may well merit thought and study. But such speculative figures do not belong in your books of account, nor in your statements of cost.

CHAIRMAN WELLINGTON: I am very sorry to have to cut the time short. This is a subject to which we could easily devote another half hour, but unfortunately we have another subject coming. I am going to give Mr. DuBrul three minutes to reply to the last two gentlemen and then go on to the next subject.

MR. DUBRUL: I dearly love a good argument, but I do ask that when men go into argument, they stick strictly to the point. I don't think I charged all accountants with absolute economic ignorance. I am careful not to make wide generalizations, because I had a strict training in logic under a keen, critical professor, who pointed out that one exception destroys a whole argument if it is based on a generalization.

Mr. Couchman said that he himself prepared a paper on this subject in 1921 but didn't feel the time was ripe to present it. But according to my notion, he was then three years too late, and this delay is an indication that accounting theory as generally applied has not kept up to economic facts. With few exceptions, the accountants as a group have not been awake to that fact. I recognize that you must keep one set of books that is strictly according to the law of cost of acquisition. Mr. Baldwin has pointed out that you cannot do the remaining things we advocate if you do not do that elementary cash accounting. We think you must do that kind of accounting plus something more in order to get the facts. If it is too much trouble for the present accounting profession to work out this plan, there will develop a profession of superaccountants that will do it. I think the accountants ought to do it. That is a field you ought to feel able to grow into. I think, too, many accountants suffer from an inferiority complex. They don't want to grow into these other things.

As I conceive the accounting function in a business, its most important job is the guidance of management according to business facts and not mere bookkeeping fancies. If the accountants are not going to do that, somebody else is going to do it and the accountants can be the pen-pushers.

The last speaker said that he couldn't see the similarity between

depreciation and insurance. He grants the whole case for insurance, based on replacement value in the course of common, everyday business practice. I cannot see any difference except in time and cause between the swift destruction of property overnight by fire and the slow destruction by wear and tear and normal obsolescence. The owner loses the property in either case. When we insure property we do not expect to be compelled to replace that property in exact kind any more than we do when we are taking a depreciation allowance. I specifically ruled that supposed argument out in trying to clear away what I called mental rubbish.

Still, there is a good deal of property that must be reproduced in identical kind for certain reasons. I have one case in mind which clearly shows this, it being a small plant out in the country which requires two boilers. Two boilers bought in 1908, 20 years ago, cost \$1,400 a piece. There has not been a particle of change in boilers of that type since. The company finds it necessary to replace the boilers this year, when identical boilers cost \$3,400 each, compared with the original \$1,400 cost.

Now the property facts are that the company has no more boiler property than it had in 1908, when the original boilers were installed. It has no more boiler capacity. It has no more capital goods. Having no more of these things, it certainly has no surplus of these things compared to 1908.

The cash facts are that the company paid out \$4,000 more for the replacement boilers it bought in 1928 than it paid for exactly the same kind bought in 1908. The economic facts are a combination of the property facts and the cash facts, because we measure values in monetary units. So the economic facts are that the company's boiler capital is exactly the same now as it was in 1908. But the measure of the value of boiler capital had shrunk in 20 years, so that to cover the same actual capital, the measure now shows 6,800 dollar marks instead of 2,800 as in 1908.

Traditional accounting deals only with the cash fact, and assumes that the record of cash facts gives us a true picture of both the property facts and the economic facts. Some of us deny the validity of this assumption, which makes it appear that the company not only has its original boiler capital, but it has a surplus boiler capital of 140 odd per cent besides.

We deny the validity of cost accounting that does not measure this year's conversion of plant utility into product with the same

measure as that used in measuring this year's conversion of material, labor, and supplies into the same product. We vision cost accounting as being concerned with actual values, and not as being an affair of mere dollar marks on books, which have lost their significance due to changes in the elastic tape measure that we have to use in measuring values.

Of course we have to use the original cost dollar marks, but actual depreciation costs are those dollar marks plus or minus some others because of changes in price levels that are in effect changes in the measure of value. We say that to give executives accurate records of business facts, we must calibrate our value measures, just as the physicist does his.

CHAIRMAN WELLINGTON: I am mighty sorry we can't continue with this topic, because it has a lot of good meat. Some people are actually using this plan, as Mr. Otto has described it, and some others are very definitely opposed to it, but we will have to continue this discussion in chapter meetings. I think it is a very good subject for local meetings where a whole evening can be devoted to it.

The next question is the handling of accounting for loss and gain on standards. The principal paper will be given by my partner, Mr. Fletcher.

MR. F. RICHMOND FLETCHER: Mr. Chairman, Ladies and Gentlemen, copies of the paper that I have prepared are now being distributed and it was my thought that you would make notes of questions as I proceed with a reading of the paper, and then, in raising questions, refer to specific paragraphs and pages. After I have presented the paper, we will ask Mr. Maynard to give his reasons for the inclusion of variances, or loss or gain on standards, in the current month, and then Mr. Sweetser will present his argument for the inclusion of variances from standards when the goods are sold, rather than in the period in which they occur.

Because of the short space of time, I'm going to cut my paper, and you will have to read it over and make notes of the questions you would like to ask. Then perhaps at some more favorable opportunity, you can ask those questions, or at least discuss them among yourselves.

I shall pass over the first few pages and dip into my presenta-

tion. You will note that I have numbered all paragraphs, and at the back of the paper there are two blank sheets on which you can refer to paragraphs you would like to question.

Mr. Fletcher then presented his paper.

## THE ACCOUNTING FOR LOSS OR GAIN ON STANDARDS UNDER A STANDARD COST PLAN

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### SECTION I

(a) In the operation of any plan of standard costs it is necessary that the accounting records provide properly for the variances from standard costs which must ultimately affect the statement of loss and gain. The question arises whether it is more logical to include these losses or gains in the Statement of Trading and Loss & Gain for the period in which they occur, or to record them outside the books and bring into the accounting for the period only that proportion of the loss or gain that applies to the cost of goods sold for the period.

(b) In order to view this question understandingly it may be well to consider what these variances are and, because they will differ according to the nature of a particular business, we shall confine our comments to the ordinary elements that are common to most manufacturing concerns:

Loss or Gain on Purchases

Loss or Gain on Direct Labor

Loss or Gain on Materials Used

Loss or Gain on Manufacturing Burden

Loss or Gain on Selling Expense

### Loss or Gain on Purchases

(c) Assuming that a standard price has been set for each kind of raw material or finished merchandise purchased, it is possible, by pricing each incoming invoice at standard cost, to set up on the Accounts Payable Record the standard cost of purchases chargeable to inventory accounts as well as the actual cost due to vendors for those purchases. The difference between these totals

at the end of any period would represent the loss or gain on purchases. Further classification of this loss or gain by classes of material can be readily developed, if needed. The inventory control under this plan is carried on the standard cost basis.

(d) In entering these purchases on stock record cards, it is advisable to carry the average actual unit cost as well as the standard cost per unit, although the standard cost per unit is the figure to be used in charging work-in-process.

(e) A second method that is in use charges the inventory control at actual cost, accumulates the loss or gain on purchases by figuring the total withdrawals from stock for a given period at actual cost and at standard cost, thus taking the purchase loss or gain when the materials are used, rather than at the time the invoices are entered on the books. Both plans have merit in different types of industries and both plans provide a periodic statement of loss or gain on purchases. The question then is—Shall this loss or gain on purchases be reckoned as a gain or loss for the period, or shall it be set aside as a deferred item and only that portion of it absorbed in the loss or gain statement for the period as applies to the material value in the sales for the period?

### **Loss or Gain on Direct Labor**

(f) Assuming that standard labor operations and standard labor rates have been established, the weekly payroll is the natural means of accumulating actual in comparison with standard labor costs, and the accumulation of loss or gain on labor for four weeks, or the calendar month, represents the debit or credit to loss or gain on labor for the period. The question then arises—Shall this be charged as loss or gain of the period, or shall it be deferred and only that portion of the loss on direct labor be absorbed that applies to the labor in finished goods sold during the period?

### **Loss or Gain on Materials Used**

(g) Assuming that standards have been set to show the quantity of material required for each unit of finished production, it is possible to determine from requisitions withdrawing materials from stores against specific orders, whether the amount of material actually used is in excess of, or less than, the standard allowance for the number of units produced. This accumulation of loss or gain on materials, based on production for the period,

represents the loss or gain that has been created during that period. The question then arises—Shall this total amount be charged to loss or gain for the current period, or shall it be deferred and only that portion of the loss absorbed that applies to the cost of materials in the goods sold for the period?

### Loss or Gain on Burden

(h) Assuming that a budget of manufacturing expenses has been established, with burden statements for the several departments properly developed and burden rates fixed, suppose for the sake of simplicity that there are no variances from the budget in any expense items but that the department actually works 100 less standard hours than the budget provides for. Shall the consequent unearned burden be charged to loss and gain for that period, or shall it be deferred and only that portion which pertains to the labor hours in the cost of goods sold during that period be absorbed?

(i) Selling and Administrative expenses create a similar situation although, with the exception of certain extremely seasonal industries, it is the common practice to absorb actual expenses in the current period.

### COMPARATIVE STATEMENT OF TRADING AND LOSS OR GAIN

	<i>Current Period</i>		<i>—Weeks to Date</i>		<i>Last Year Same To</i>
<i>Sales</i>	<i>Prs.</i>	<i>Amt.</i>	<i>Prs.</i>	<i>Amt.</i>	<i>Period Date</i>
Regular Shoes .....	000	\$0000	000	\$0000	
Less Returns.....	000	0000	000	0000	
	<hr/>	<hr/>	<hr/>	<hr/>	
Net Sales.....	000	0000	000	0000	
Standard Cost of Goods Sold .....		0000		0000	
		<hr/>		<hr/>	
Gross Gain.....		0000		0000	
		<hr/>		<hr/>	
Job Shoes .....	000	0000	000	0000	
Less Returns.....	000	0000	000	0000	
	<hr/>	<hr/>	<hr/>	<hr/>	
Net Sales.....	000	0000	000	0000	
Standard Cost of Goods Sold .....		0000		0000	
		<hr/>		<hr/>	
Gross Gain .....		0000		0000	
		<hr/>		<hr/>	

COMPARATIVE STATEMENT OF TRADING AND LOSS OR GAIN  
(Continued)

	<i>Current Period</i>	<i>—Weeks to Date</i>	<i>Last Year Same To Period Date</i>
<i>Sales</i>	<i>Prs. Amt.</i>	<i>Prs. Amt.</i>	
Miscel. Materials and Scrap	0000	0000	
Cost of Materials Sold..	0000	0000	
	<hr/>	<hr/>	
Gross Gain .....	0000	0000	
	<hr/>	<hr/>	
<i>Total Standard Gross Gain</i>	0000	0000	
Less Standard Selling Ex-			
penses .....	0000	0000	
	<hr/>	<hr/>	
Net Standard Gain on			
Sales .....	0000	0000	
<i>Gain or Loss on Standard Cost</i>			
Sole Manufacturing .....	\$0000	\$0000	
Sole Burden.....	0000	0000	
Heel Manufacturing.....	0000	0000	
Heel Burden.....	0000	0000	
Shoe Manufacturing.....			
Materials .....	0000	0000	
Labor .....	0000	0000	
Burden .....	0000	0000	
Purchases .....	0000	0000	
Selling Expenses.....	0000	0000	
	<hr/>	<hr/>	
	0000	0000	
	<hr/>	<hr/>	
Net Actual Gain on			
Sales .....	0000	0000	
<i>Other Income</i>			
Discounts Taken .....	0000	0000	
Interest Earned.....	0000	0000	
Interest Charged to Cost.	0000	0000	
	<hr/>	<hr/>	
Total .....	0000	0000	
	<hr/>	<hr/>	
<i>Other Expense</i>			
Interest Expense .....	0000	0000	
	<hr/>	<hr/>	
Total .....	0000	0000	
	<hr/>	<hr/>	
Total Net Gain for			
Period .....	\$0000	\$0000	
	<hr/>	<hr/>	

### Treatment of Inventories Under a Standard Cost Plan

(1) The pricing of inventories under a standard cost plan, and the method of accounting for changes in prices are set forth in the following paragraphs.

(2) The final inventory figures for the fiscal year which are part of the financial statements and tax returns should theoretically be priced at cost or market, whichever is lower, for each item in the inventory. As a practical matter, however, the standards that have been used during the year may be used in pricing the inventory without further adjustment unless the market prices of raw materials, or labor or burden costs have changed substantially. Any such changes will be considered in raising or lowering any of the standards, and when any standards are changed, all items affected by the change should be priced at the new price as well as at the old. The total of changes in the inventory due to revision of standards will normally be carried, when made, to the account Reserve for Inventory Adjustments.

(3) This procedure, however, may be modified when adjustments are made at the end of a fiscal year. Where standards are increased for the new year as compared with the old, the books should be closed for the old year on the basis of the old standards, and the increase should be credited at the beginning of the new year to an account Reserve for Inventory Adjustments.

(4) On the other hand, if the standards are decreased, all or part of this decrease should be carried to Profit and Loss for the closing year. In most cases, the total difference could be so charged to Profit and Loss. The only modification of this would be where market prices of materials had dropped at the close of the fiscal year but a still further drop was expected for the coming year, and, therefore, in setting the standards for the coming year, prices were used that were lower than the market at the closing of the fiscal year. Under such circumstances it would be correct to price the inventory items affected at market at the close of the fiscal year, using this basis for the closing of the books, and the difference (between this basis and the inventory priced at the new standards) as the opening debit for the new year to the account Reserve for Inventory Adjustments. It is unlikely that the con-

tingency will arise requiring this distinction between market prices and new standard prices.

(5) The following paragraphs set forth in detail the procedure under various situations.

- (6) Assume an Inventory at the Close of an Accounting Period  
At Cost or Market, whichever is lower  
100,000 units @ \$1.03 = \$103,000  
with which value the books were closed

(7) It is desired to use hereafter a standard cost plan, and, as prices are going up, it is decided to set as a standard a unit value of \$1.05

An entry in the new year will be made as follows:

Inventory .....	\$2,000
To Reserve for Inventory Adjustments	\$2,000
To value opening inventory	
of 100,000 units at \$1.05..	\$105,000
Instead of present book value	
\$1.03 .....	103,000
	<hr/>
	\$ 2,000
	<hr/>

(8) At the end of the first year under the standard cost plan there are on hand 50,000 units which at the standard value of \$1.05 = book value of \$52,500.

(9) Assume first that prices are falling:

- (a) The value of the inventory items will be determined, in order to be conservative and avoid unnecessary tax  
At Cost or Market whichever is lower  
50,000 @ \$1.045 = \$52,250  
And before the books are closed for the year a journal entry will be made as follows:

Reserve for Inventory Adjustments....	\$2,000
To Inventory .....	\$ 250
Profit & Loss.....	1,750
To Adjust Inventory from	
Standard 50,000 @ \$1.05....	\$52,500

To Cost or Market, 50,000 @  
 \$1.045 ..... \$52,250

And also to eliminate reserve  
 and adjust profit and loss.

- (b) It is decided to adopt a new standard of \$1.00

An entry will be made, after the books have been  
 closed, as follows:

Reserve for Inventory Adjustments...	\$2,250	
To Inventory .....		\$2,250
To value opening inventory,		
50,000 @ \$1.00.....	\$50,000	
Instead of 50,000 @ \$1.045...	52,250	
		<u>\$ 2,250</u>

- (10) Now Assume that Prices, instead of Falling, are Rising:

- (a) It will generally be unnecessary to compute the cost or market, whichever is lower, value of the closing inventory, as the value at the old standard will be at least conservative, and using this will not result in larger tax payment than is due, and any error the other way will be automatically adjusted next year. The closing inventory will therefore be 50,000 units @ \$1.05, \$52,500.

Before the books are closed an entry will be made as follows:

Reserve for Inventory Adjustments..	\$2,000	
To Profit & Loss.....		\$2,000
To adjust Profit & Loss and leave book inventory at old standard \$1.50		

- (b) It is decided to adopt a new standard of \$1.10.

An entry will be made, after the books have been closed, as follows:

Inventory .....	\$2,500	
To Reserve for Inventory Adjustments		\$2,500
To value opening inventory,		
50,000 @ \$1.10.....	\$55,000	
Instead of 50,000 @ \$1.05...	52,500	
		<u>\$ 2,500</u>

## SECTION II

**Writing Off Variances from Standard Cost in Proportion to the Standard Cost of Goods Sold**

1. The Dutchess Manufacturing Company at Poughkeepsie, N. Y., manufacturers of trousers, use standard costs throughout, but instead of absorbing variances from standard costs in the periods in which they occur, accumulate these variances in detail and absorb only that portion of the variances which is represented by the amounts of materials, labor, and burden costs, in cost of goods sold for the period.

2. All materials and supplies purchased are charged to Inventory account at actual cost, and when withdrawn from stores are priced at both standard and actual cost. Inventory is credited with actual and Goods-in-Process is charged with standard, the difference going to Variations on Standard Cost.

3. Direct Labor is figured at both standard and actual cost, Goods-in-Process is charged with the standard cost and the difference is carried to Variations on Standard Cost.

4. Burden is figured at actual cost in comparison with the budget standards by departments, and is calculated as Fluctuating and Fixed Charges. The difference between the burden earned and the actual cost of Fluctuating items is carried to Variations on Standard Cost, together with the difference between the standard and actual Fixed Charges, making a total variation on standard burden. The difference between Standard Fixed Charges and the Fixed Charges Absorbed, which is a standard percentage of standard direct labor, establishes a charge to Profit or Loss for Idle Capacity. Burden earned and charged to Goods-in-Process is found by multiplying the Standard Labor Cost by burden rates.

5. Under this plan, Goods-in-Process is charged with Standard Cost, and Variations on Standard Costs represent the difference between Actual and Standard.

6. As goods progress from Goods-in-Process to Finished Goods the transfer is made at standard cost. The next step is to ascertain the percentage of the Standard Cost of Goods-in-Process transferred to Finished Goods, and to transfer a corresponding percentage of the Variations on Standard Cost of Goods-in-Process

account to the Variations on Standard Cost of Finished Goods account.

7. When goods are sold, Finished Goods is credited, and Cost of Goods Sold is charged at standard cost. The next step is to ascertain the percentage of the Finished Goods transferred to Cost of Goods Sold, and to transfer a corresponding percentage of the Variations on Standard Cost of Finished Goods account to Cost of Goods Sold. The Cost of Goods Sold is thus, through these two charges, stated at actual cost.

8. Under this plan the books are carried on an actual cost basis and all variances from standard cost are recorded outside of the general ledger. The Earnings Statement for the current period shows only the actual cost of goods sold, rather than the standard cost with adjustments to bring standard to actual as is ordinarily done under the standard cost plan.

9. The general ledger carries one account, Inventories, which represents the actual cost of materials and supply stores, goods-in-process, and finished goods. This account controls and is supplemented by a series of periodical statements which show standard costs and variances from standard and in total equal the actual inventory. These statements are:

Movement of Inventories—Materials and Supply Stores

Movement of Inventories—Goods-in-Process

Variations from Standards

Movement of Inventories—Finished Goods

Comparison of Manufacturing Budget with Actual

Budget and Actual Expenses by Elements (excluding direct materials and direct labor)

Departmental Statement of Budgeted and Actual Expenses

### **Movement of Inventories—Materials and Supply Stores**

10. This statement carries in tabular form a list of all items included under Materials and Supply Stores. Other columns show opening balance, received, issued, closing balance and the rate of turnover for the period. All columns show *actual* cost.

### **Movement of Inventories—Goods-in-Process**

11. This statement shows in tabular form a list of all items entering into goods-in-process. Other columns show opening inven-

tory, additions, deductions, and closing balance for the period, all at standard cost. Below the totals, variations from standard cost are entered so as to arrive at the actual cost of work-in-process for the period.

### **Variations from Standards**

12. This statement lists in tabular form the items on which loss or gain on standard cost may occur. Other columns show the accumulative loss or gain on standard costs for each item. At the close of the period the total variances that are not absorbed in Cost of Goods Sold remain as variances in Goods-in-Process and in Finished Goods.

### **Movement of Inventories—Finished Goods**

13. This statement carries in tabular form a list of all classes of finished goods. Other columns show opening inventory, additions, cost of goods sold, and rate of turnover for the period. All columns show *standard* cost. Below the totals, variations from standard cost are entered in order to arrive at the actual cost of finished goods in inventory.

### **Comparison of Manufacturing Budget with Actual**

14. This statement shows in tabular form a list of all departments. Other columns show the standard labor cost, the variance from standard labor cost, the actual burden, the standard and actual burden rates, the amount of variance from standard cost on fluctuating elements of burden, the amount of variance from standard cost on fixed elements of burden, the pairs produced in comparison with the budgeted production, for the period and to date.

### **Budget and Actual Expenses by Elements**

15. This statement shows in tabular form a list of all elements entering into manufacturing burden, selling, and administrative expenses. Other columns show the budgeted cost, actual cost, and variance for each element for the period and to date.

### **Departmental Statement of Budgeted and Actual Expenses**

16. One of these statements is used for each department and carries in tabular form a list of all burden elements, grouping them

under the headings, "Fluctuating Items," and "Fixed Charges." Other columns provide for the budgeted amount, actual cost and variances for each element of burden for the period and to date.

17. Under the total of Fluctuating Items the difference between the burden earned (direct labor times standard rate) and actual cost is shown as a variance from standard burden cost on fluctuating elements.

18. Under the total of Fixed Charge Items the difference between the standard and actual cost is shown as a variance from standard cost on Fixed Charge Elements.

19. At the foot of each statement the actual cost of direct labor is entered in comparison with the standard amount and the difference is shown as a variation from standard labor cost.

20. Burden earned is calculated on the basis of the standard direct labor times the burden rate.

### SECTION III

#### Writing Off Variances in the Month in Which They Occur

##### A. Statement of the Principle

Assuming that standards are properly set:

A-1. Standard costs are definitely adopted as the proper, suitable, and normal costs of manufacture. They are *the costs* of the product. The corresponding values are carried into the inventory accounts of Work-in-Process and Finished Stock, and appear on the company's balance sheet as the proper values of current assets. They form the basis of the cost of sales figures given on the operating statement when the goods are sold.

A-2. Nothing but standard costs are allowed to get into the inventories of work-in-process and finished goods.

A-3. The variances from standard, when in excess of the standard costs, represent unsuitable and improper charges not a part of normal manufacture. They are the result of inactivity, extravagance, inefficiency, or some vicissitude of business fortune. They are a definite loss through operations, not to be temporarily capitalized in the work-in-process inventory and the company's balance sheet, but to be set aside in a special account, and in all

ordinary cases written off to profit and loss as of the month in which they occur. In no other way can the attention of the factory manager and his analysts and foremen be so strongly centered on the losses and gains. In no other way can they obtain *satisfactory credit* for good work.

A-4. The manufacturing department's task is finished when the product is manufactured. It is interested in its activities for the current month. The reports of the cost accounting department present each month a detailed statement of its shortcomings in terms of losses.

(See attached operating statement, for the method of showing Cost of Sales at standard costs, and "Adjustments to Manufacturing Cost.")

## OPERATING STATEMENT

	Month of _____		
	<i>Current Month</i>	<i>Year to Date</i>	<i>Same Mo. Last Yr.</i>
Gross Sales.....	\$000	000	000
Less Returns and Allowances....	000	000	000
	<hr/>	<hr/>	<hr/>
Net Sales.....	000	000	000
Less Cost of Sales, at Standard Costs .....	000	000	000
	<hr/>	<hr/>	<hr/>
GROSS MANUFACTURING PROFIT	000	000	000
Less Adjustments to Manufactur- ing Cost:			
Variances from Standard Cost:			
(Details on supporting statements)			
Material .....	000		
Direct Labor.....	000		
Burden .....	000		
	<hr/>		
	000	000	000
Variances due to changes in Mfg. methods .....	000	000	000
Variances due to alternate practice (work done in a way other than standard).....	000	000	000
Excess cost of work done by outside firms .....	000	000	000
Inventory Adjustments .....	000	000	000

OPERATING STATEMENT (*Continued*)

	Month of _____		
	<i>Current Month</i>	<i>Year to Date</i>	<i>Same Mo. Last Yr.</i>
Rearrangement of Equipment (moving machines, changes to design).....	000	000	000
Fixed Charges on Sur- plus Plant			
Unused Space and Equipment .....	000		
Machinery in Storage.	000		
Areas in Course of Transfer .....	000		
	—		
etc., etc., etc.....	000	000	000
	—	—	—
	000	000	000
NET MANUFACTURING PROFIT	000	000	000
Less Selling, Advertising, Ad- ministration, etc. ....	000	000	000
Less Misc. Deductions from In- come .....	000	000	000
	—	—	—
	000	000	000
NET PROFIT	\$000	000	000

**B. Exceptions to Writing Off All Variances**

Exceptions which may be made to writing off all variances (de-  
ferring them instead):

- (1) In opening inventory at start of standard cost system—  
difference between old costs and new standards.
- (2) Occasional large changes in standards, which do not  
warrant recalculating inventories on new basis (which  
is usually necessary only twice a year).
- (3) Large inactivity losses, due to serious business fluctua-  
tions.

**C. Variance Gains**

Any considerable variance gains, especially from extra-activity,  
are best tucked away in a Reserve account against time of need.

### D. Accuracy in Standards Essential

It seems a reasonable requirement for all ordinary quantity production manufacture that standards should be sufficiently accurate that they can be used for balance sheet purposes. If not, there seems little to be gained by using standard costs until the management has better standardized its operations and activities.

CHAIRMAN WELLINGTON: I want to call on Henry Maynard to present what is in the document as Section III, and present his side of the question. After he has presented that, we will call on Mr. Sweetser to elaborate a little on this plan.

## ACCOUNTING FOR LOSS OR GAIN ON STANDARDS UNDER THE STANDARD COST PLAN

### Writing Off Variances in the Month in Which They Occur

HENRY W. MAYNARD

Factory Accountant, Gillette Safety Razor Company, Boston, Mass.

MR. FLETCHER'S memorandum has stated the alternative methods of treating variances fairly and clearly.

In any question of this nature, on which definite differences of opinion exist, it is best to develop first the principle involved, and the *technically correct method* of treatment—and then to decide exactly what procedure should be followed in a given case, and whether in view of existing circumstances in the individual corporation the underlying principle needs to be modified.

It is my opinion, and the Gillette Safety Razor Company accepts the principle and is operating under it, that variances from standard cost should ordinarily be written off as they occur. This is in accordance with what I conceive to be the fundamental principle of a standard cost system which, stated briefly, is as follows:

### The Purpose and Principles of a Standard Cost System

Manufacturing control is enhanced, and efficiency, economies and profits promoted, by the establishment of precise standards for such of the cost elements and factors as may be standardized in the given plant. These are definitely adopted as the proper, suitable and normal costs of manufacture; they are *the costs* of the

product; the corresponding values are carried into the inventory accounts of work in process and finished stock, and appear on the company's balance sheet as the proper values of current assets; and they form the basis of the cost-of-sales figures given on the operating statement when the goods are sold.

The variances from standard, when in excess of the standard costs, represent unsuitable and improper charges not a part of normal manufacture; they are the result of inactivity, extravagance, inefficiency, or some vicissitude of business fortune; they are a definite loss through operations, and as such are not to be temporarily capitalized in the work in process inventory and the company's balance sheet, but are to be set aside in a special account, and are usually written off to profit and loss as of the month in which they occur.

Instances are numerous where finished goods have been carried on the books at values which included inactivity, inefficiency, or similar excess charges which could not be recovered in the selling price; history multiplies cases where such overstatements of current assets have led management into the adoption of operating and price policies which, while apparently sound and justifiable, have resulted in serious losses, financial straits, and frequent industrial mortality.

Under the principle of the standard cost system, therefore, standard costs only are allowed to get into the inventories of work in process and finished goods; and at these values the sales are costed, without regard to the month in which the goods were manufactured. The variance losses are written off currently as sustained. They are included on the operating statement in a bracket called "Adjustments to Manufacturing Cost" or "Losses from Manufacturing Operations" and explained in detail on supporting statements. The profit and loss statement then takes the form shown on pages 273-274.

We believe that if we have operating losses, we should take our licking in the month in which the losses were made, and not allow them to ride over until the goods are finally sold. This is not only conservative from the point of view of accounting and financial statements. Its great practical value lies in the fact that it centers the attention of the management, as nothing else will, on their shortcomings for the month—not only the manager, but through him the operating executives responsible for economies, and the

foremen in whose hands rests fundamentally the economical or extravagant operation of the company.

The manufacturer's job is done when the product is made. He is interested in his accomplishment at the time it takes place, and not later on when the goods are sold. He can make adequate economies only by knowing promptly where yesterday's dollar was lost, that he may save tomorrow's dollar.

On the Operating Statement the Gross Manufacturing Profit states how much might have been made under normal activity and "conditions of reasonably diligent manufacture," and the difference between that and the Net Manufacturing Profit represents presumably preventable losses.

### How Variances Are Reported

A word as to how we report the variances in detail. First, an Operating Cost Summary gives (to the directors) on a single sheet a condensed bird's-eye picture of the plant operation in total. There is a text of "high spots," which points out straightforwardly the gains and losses for the month, and calls attention to important items. This is followed by a summary sheet of the regular manufacturing operations for the entire factory, and subordinate summaries of the manufacturing divisions. Then come individual statements for all of the direct and indirect burden centers. Supporting the main book are two others, one giving details of materials and supplies, the other of repairs and maintenance.

The important point of these statements is that the actual expenses are matched up with the "flexible budget," which provides a precise and detailed comparison between the *actual expenses* for each month and the amounts *which should have been spent* for the actual production or accomplishment of the period.

In the afternoon session I expect to describe how the manufacturing department takes our reports, analyzes the gains or losses from the manufacturing and engineering point of view, and then proceeds to obtain economies.

### Exceptions to the General Rule

I have said that we write off variances when they occur and that we do not defer them. There are occasional exceptions to this rule. When the company's books were swung over to the new cost accounting system as of January 1, 1928, and the inventories were

calculated at both the old costs and the new standards, there naturally developed an inventory price adjustment. This was not written off at the time but has been carried through into finished stock and cost of sales as the goods moved. Again, an important change was made in a certain standard, of such a nature that it was not desirable to reprice the inventories until June 30. In the meantime this difference is also being deferred and carried through into finished stock and cost of sales as the goods are shipped.

An exception may also be made in the case of a large inactivity variance. In some businesses it is difficult to forecast the amount of sales and production. Yet it is necessary to establish normal activity to obtain standard burden costs. If there is a large inactivity cost I should agree to deferring it, and passing it through into cost of sales as goods are sold.

If there is a large variance gain, especially from extra activity, it is certainly desirable to tuck it away into a reserve account against time of need.

It is important to note, however, that these exceptions are made only where financial or merchandizing interests are stronger than operating interests. Our principle is to write off all variances as operating losses in the month in which they occur.

### **Income Tax Requirements**

The examples given by Mr. Fletcher have quite largely referred to inventory calculations to satisfy the Internal Revenue Commission. My thought on the matter is this. We do our own thinking and develop our own methods for cost accounting, according to what we believe to be the best modern practice. If that thinking happens to be several years ahead of the regulations established for income tax statements, then we are perfectly satisfied to spend the extra money to render to the Commission their annual statements as their instructions require, and at the same time render to our management and directors statements which we believe to present a true interpretation of the company's operations.

### **Dependable Standards**

One special point needs emphasis. In order to use this method successfully, standards must be adequately set. This means that it must be determined how much material is required to make a unit of finished product, and what the purchasing department

should pay for it; how much work an operator should produce per hour, and what he should be paid for doing it; and how much product should normally be made per year, what the overhead should be to fabricate it, and what the machine output should be per hour. In nearly every quantity production business these facts should be definitely known; if not, it indicates that something is wrong with the management. To the extent that such data can be determined, I believe that variances from standard should be written off as they occur. While standards are being developed, the deferring of variances according to Mr. Sweetser's method, or the reporting of variances statistically, may be a satisfactory temporary procedure. But if it is not possible to determine standards so dependably that they can be carried into the books of account, I doubt whether standard costs should be used at all for such items.

CHAIRMAN WELLINGTON: We will next hear from Mr. Sweetser, who needs no introduction, as to the plan which is followed by his company, and which has been in effect for a number of years.

MR. SWEETSER: I think our former President, Mr. Scovell, would be very happy to have seen the National Association of Cost Accountants functioning as it is this morning. There have been a number of things started here this morning, which I imagine will take the chapters a good deal more than a year to work out.

This particular question was taken up at the convention in Springfield, and it was discussed at some length, but it never has been settled. The question is, whether the variations of manufacturing cost elements shall be completely charged off during the period or whether only a portion shall be used to equalize the cost of sales.

My conception of good cost accounting is that it covers four principal points. The record must be simple, clear, prompt, and economical. Simplicity might be well illustrated by the address of Abraham Lincoln at Gettysburg. There were no unnecessary words used in that address. I think there have been some unnecessary words used here this morning.

Clearness might be illustrated by the story about little Johnny who was in the arithmetic class in school. A visitor wished to ask the class a question and she said to little Johnny, "How much is two and two?"

He said, "Four."

The visitor remarked, "Very, very good."

Johnny said, "Hell, that's perfect."

That was clear.

Promptness might be illustrated by the point of the man who was waiting in the railroad station for a delayed train. The station agent told him yesterday's train hadn't come along yet, and to take a little nap, as he would call him when yesterday's train came along.

The man went out into the street, and when he came back he found a train pulling out of the station. He berated the station agent for not calling him. "Oh, go on," the station agent replied, "You've got a whole day to sleep, that was the day before yesterday's train."

That is like the timing of some of the statements and reports we cost accountants make.

I am sorry I was not here this morning to hear Bill Cutter tell about the splendid surplus of \$100,000 we have on hand. I know of no other association in the world that can say a thing like that.

Coming back to the subject, let's get simplicity, clearness, promptness, and economy into the answer to the question of disposition of cost variations. It is my belief that standard costs are desirable, but that standard costs have no place in the general ledger or in the balance sheet or in the earnings statement. I will state that as an executive, I wouldn't care for an earnings statement given to me like the two you have in the papers just presented, and please remember, I am not attacking anybody, but just starting something to talk about.

I have seen the earnings statement of a friend in Kansas City. It is up to May 31. It was made in Mr. Dillon's office, one of the National Directors, and completed on the night of the seventh of June. It doesn't look like these sample earnings statements because it has no reference to standard cost. Standard cost is purely statistical data and should be taken care of outside of the general books. In order to do that, you must set up some kind of a reserve statistically so that you can have your standards used for the purpose for which they are intended, namely, to present to the executive the variation from standard cost so that it will guide his actions. That is the primary purpose for which they are intended. A secondary purpose is to check the values in the goods

in process and finished goods records, and without interference with your balance sheet and earning statement records which must control the actual costs, which in turn are disclosed by use of standard costs variations.

There is one point that might be raised. Mr. Fletcher's paper was not quite clear. Idle capacity should be charged to profit and loss. The goods which you make in times of 50% operations are not responsible for the costs of the burden on the other 50% which you don't make, and you should relieve the goods produced from those charges. Outside of that, variations should not enter into the general books.

Another point is that standards should not be changed excepting when absolutely necessary. Standards are merely a measuring stick, and you can measure anything by a foot rule, yardstick or 10-foot rule and arrive at a definite conclusion as to the length of the article, and that is what standards are for. It is much better not to change them unless you have to.

The idea of having a semi-annual inventory for the sake of cleaning up standards is wrong. If standards need to be changed, your machinery should be adequate to make the change at any time you desire. Every executive is entitled to a clear, prompt statement of his earnings. As a rule, they are interested in one figure—that at the bottom of the earnings statement. To get them to think about others, you must make them very definite, very clear, and very brief. Don't include anything that is not necessary. If you want them to think about variations from standard cost, please put variations by themselves on a separate report very concisely stated, graphically, if possible, to force the attention of these men who really avoid thinking about them very much anyhow, especially if in the red.

There are just two or three other points I would like to suggest to Mr. Maynard, in the kindest spirit possible, and purely for the sake of arousing discussion. The factory manager and the foremen who use the statistical data are in no way interested in how the account is charged off on the books. I see no reason why any factory manager should come into the problem of disposition of variations at all. I don't like Mr. Maynard's printed report. Although he did not refer to the expense necessary to set up A, B, C, and D, the system which he recommends does not provide the flexibility required to handle variations. He says if you have

excessive losses, then do something about it, and if you have excessive gains, you must set up a little reserve for future needs. That is unnecessary if you handle the problem properly. He also says that standards are usually adequate enough to serve for balance sheet purposes. Often they are not adequate and means must be provided for equalization. I certainly thank you for your attention, and I am sorry the session has kept you so long that discussion at this time is not possible.

CHAIRMAN WELLINGTON: We haven't much time, but we can devote the next five or ten minutes at the most to answering questions from the floor. I would be particularly glad to hear from any man who has very definite ideas as to what he does or what he would like to do in his own company, charging off variances, or carrying them along as Mr. Sweetser suggests.

MR. MAYNARD: I should like to take a minute to reply briefly in rebuttal. Mr. Sweetser and I are not, I think, talking the same language. His conception of standard costs and mine are different. To me, standards are not mere "index figures," but are true measures of accomplishment under current conditions. At the Gillette Company, for example, our standards are up to date. We adjust them to agree with changes in manufacturing methods, and on that basis, we make our reports to the management. (We also use "fixed standards" [changed every six months] in keeping our book inventories as a matter of bookkeeping expediency, and write off the differences between them and the "current standards.")

I should like to ask Mr. Sweetser, if standards are set on the basis he suggests, how much inefficiency, expense and extravagance he would be willing to capitalize on the company's balance sheet?

Why are actual costs so sacred that they must always be used? If a banker, let us say, requires financial statements using actual costs, then let us follow Mr. DuBrul's thought and keep separate records to satisfy the banker, but let our reports to the management reflect the true operating conditions for the period.

Mr. Sweetser said that factory men don't need, or are not interested in, profit control. I must disagree. With us, for example, the head of manufacturing is a vice-president and director of the company, and is vitally concerned both with profits and with factory "cost efficiency." He obtains economies through the control

which the "flexible budget" and cost accounting statements enable him to exert on his manufacturing executives. The head of manufacture of any company should be equally interested, and for the same reason—because fundamentally it is in the factory and not in the sales department that profits are made.

MR. EARNEY A. DIETZ (*A. B. Farquhar Co., Ltd., York, Pa.*): Under loss or gain of direct labor, is it safe to operate a standard cost system on a premium incentive basis, based on paying 50% of the gains to the employee and 50% to the company, guaranteeing the day rate in the case of loss?

In our case, as shown in the Statistical Report, periodically, there was in the total consumption of direct labor about 60% of it Standard.

Some departments, as a whole, over their entire productivity of standards were having about 50% gains and 50% losses; some departments just broke even, while other departments showed excess gains and losses. By a total tabulation of the actual production labor and the total consumption of standard labor over all, both gains and losses covering a period, the increase or decrease by groups within classification of product showed such remarkable small variations that it revealed some hidden facts.

To get it clear, in short, 50% of the total consumption was declaring gains and 50% declaring losses. I think the trouble is based on improper setting of standards.

CHAIRMAN WELLINGTON: I should like to ask Mr. Fletcher to discuss that point for just a moment.

MR. FLETCHER: I think in any question of that sort, it is essential to be sure that standards are right. In the second place, keep losses and gains individually and separately. As far as your accounting is concerned, for the current period, you are concerned with the net result, but that accounting is merely a summary of what has happened. The statements that go to the executives must show losses and gains separately. You can't average them in talking to a foreman. Frequently a cost man will say that his standard costs prove within 2% of actual. That doesn't mean a thing. You must know what the losses and gains consist of, where they occurred, and what caused them. You can know what caused those

variances day by day if you take them up with the people who caused them while they are still fresh in mind. The clerk who makes the time cards should know the difference between what is done and what should be done at the time a job is completed.

I was interested in a shop recently where they had labor standards in operation. I was at the timekeeper's desk in the factory when a workman came up for his next job and asked what the standard time was on that job. There was no incentive except the idea that he was out to better it.

MR. DIETZ: The reason I asked that question is, my service in this respect was making statistics and showing gains and losses as they occurred, and the Plant Management thought they were not useful and unnecessary, therefore discontinuing the tabulation of standards under two distinct accounts, namely Gains and Losses, but instead, throwing all standards under one account, aside of the other account, namely, actual, and declaring Increase or Decrease.

MR. FLETCHER: Here is a statement (indicating) showing the losses and gains for a shoe factory for the week ending so and so. The first column shows the current period, the second the weeks to date, and the third the year to date, itemized item by item on everything for which we have standard costs. This statement goes weekly to the people who are concerned with them and these people must explain these differences to the management through the cost accountant.

CHAIRMAN WELLINGTON: Ladies and Gentlemen, it is now time to adjourn in order to meet promptly for the afternoon session at 2:15. I know we all appreciate the work done by the various speakers in preparing the papers and in presenting the discussion. I suggest that we give them a rising vote of thanks.

**SESSION VI**  
**WHAT STANDARD COSTS ARE DOING**  
**FOR THE REDUCTION OF COSTS**  
**IN THE PRODUCTION**  
**AND DISTRIBUTION**  
**DEPARTMENTS**

**THURSDAY AFTERNOON, JUNE 14, 1928**

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**This Session Was Organized Under the Direction of**

**G. CHARTER HARRISON**

**Stevenson, Harrison & Jordan, Chicago, Ill.**

C. HOWARD KNAPP was first connected with Tait Unit Company of Melrose, Massachusetts, manufacturers of loose-leaf system supplies. After some sales experience he joined the Special Service Department of Library Bureau and then became a partner in Cutter, Fletcher and Company, cost engineers and auditors. In 1912 he became accountant with Waitt and Bond, Inc., where he has been almost ever since. At present, he is secretary, assistant treasurer, and director in charge of finance of this company. He is a member of the American Management Association.

G. R. LOHNES, after leaving high school, went into business, pursuing a course in accounting by correspondence and evening study. He was employed in the Accounting Department of the National Cash Register Company in 1910 and served in various capacities until 1916, when he was appointed head of the Foreign Accounting Division. In 1920 he was made Assistant to the Comptroller, and in March, 1926, was appointed Comptroller of the Company. He is a member of the National Association of Cost Accountants and is now President of the Dayton Chapter.

HENRY W. MAYNARD (see Session V for biographical data).

HENRY R. BOSTON, after graduation from the College of the City of New York and from Lehigh University, became a Production Engineer of Bethlehem Steel Company and Industrial Engineer on the staff of Scovell, Wellington & Co. He is now Chief Cost Accountant and Purchasing Agent of Stevens and Thompson Paper Company. He is a member of the National Association of Cost Accountants and is President of the Albany Chapter.

H. E. PARKMAN was graduated from Harvard College and was for seven years connected with the New York State Oil Company of Albany. Since then he has been with F. C. Huyck & Sons, at present being Secretary and Comptroller. He is a certified public accountant of New York.

D. W. TYRRELL is a graduate of the University of Wisconsin in chemical engineering. Since the war he has been with the French Battery Company, Madison, successively as Assistant Factory Manager, Comptroller and now Treasurer. He is a member of the American Management Association.

LLOYD F. MOGEL is a graduate from Extension School of Accounts and Finance, University of Pennsylvania. He has spent four years as production clerk with the International Money Machine Company; five years on cost work and statistical records with the Narrow Fabric Company; and two years as cost accountant with the Noe Equi Textile Mills. He is a member of the National Association of Cost Accountants, Philadelphia Chapter.

WM. G. ETTERS HANK, after attending school where he studied accounting and finance, was employed in bank work in New York City. For the past fifteen years he has been with the American Chain Company, Inc., Bridgeport, Conn., as General Accounting Manager in charge of all Accounting and Financial records of the company and its subsidiaries.

H. P. HITCHCOCK was for four years office manager of various plants of the Du Pont Company. For the past five years he has been with the J. C. Haartz Company as Assistant Secretary in charge of office, accounting, and purchasing.

WM. F. WORRELL was educated at Rochester, New York. For fourteen years he was auditor of one of Rochester's photographic companies. During the past ten years, he has been associated with the International Silver Company at Meriden, Conn., as Supervisor of Factory Accounting. He is a past president of the Hartford Chapter, National Association of Cost Accountants.

## WHAT STANDARD COSTS ARE DOING FOR THE REDUCTION OF COSTS IN THE PRODUCTION AND DIS- TRIBUTION DEPARTMENTS

**P**RESIDENT STEVENSON: Ladies and Gentlemen, we will now open our sixth technical session. The session this afternoon deals with the question of what standard costs are doing for the reduction of costs in the production and distribution departments. As I said yesterday, our organization as a whole has become, I think, very firmly committed to the standard cost idea. We believe in it first of all because we believe that it is a true expression of value. The fundamental purpose, I think, of all cost work is to arrive at a determination of true value. True value, of course, is used in determining price, and should be so used, although we have not won over all accountants to a 100% belief in it. And it should properly be used as the foundation for balance sheets and all statements of value.

The further great advantage of standard cost lies in the control which it gives to the actual operating heads of a business and the men who are in charge of the various departments in their efforts to operate them as economically as possible.

This session has been organized by my esteemed partner, Mr. G. Charter Harrison. Mr. Harrison needs no introduction to you gentlemen. He has been a member of the National Board and has organized and conducted sessions I think at two of our previous conventions. His books, articles, and writings on standard costs are well known and are fundamental treatises on the subject. He has arranged to have a number of gentlemen, whose companies have actually employed standard costs, come before us this afternoon and tell us in brief ten-minute talks what their companies have actually accomplished through the use of standard costs.

We have discussed at great length technique, methods, fundamental underlying principles, and now we are going to see, from the angle of control, what standard costs are actually doing for a

number of our leading and representative companies. It gives me great pleasure to turn the meeting over to Mr. Harrison.

CHAIRMAN HARRISON: Mr. Stevenson, Gentlemen: Seventeen years ago, in the little town of Kewanee, Ill., I made my first venture into the field of standard costs. This was more than a venture, it was an adventure. We were traveling an unbeaten path. We had no N.A.C.A. in those days to turn to for information regarding cost accounting, and we had to blaze our own trail. One curious condition existed with this company for whom I installed my first standard cost system. I took up my work in the second quarter of the fiscal year, and found out not only had they at that time sold their full capacity for the year, but that they had oversold it 25%. That was typical of the days before the war, it was typical of the days during the war, and it was typical of the hectic year 1919. The primary requirement of business in those days was production, more production and then more production still. And then we hit those sad years of liquidation, 1920 and 1921, when overnight a seller's market was turned into a buyer's market. Today we have arrived at a situation where the factory which once was king has been compelled to abdicate in favor of the sales department. It is a curious irony of fate, is it not, that it has been the wonderful increase in the efficiency of the factory that has resulted in forcing it to take a secondary place in the industrial structure?

Government statistics show that since the beginning of this century, the average production of men engaged in factories throughout the country has increased 80%, and the result is that today, figured on the basis of consumption over a number of years, the consumptive power of this country only represents approximately 60% of its producing capacity.

In our early standard cost systems, we used to figure out costs on the basis of operating a plant 100%, but today this would be foolish in most cases. Therefore, we are put in a position where we can no longer, in our cost systems, ignore the distribution end, and the first step that we have to take today in lining up standard costs is to predetermine what the sales are going to be and, on that basis, set up our standards.

These are changing times and the accountant has got to change with the times. He has got to think quickly. Thinking quickly is

beginning to be a necessary accomplishment for every one. In Wisconsin, where I spend a lot of time, I find that even the farmer has learned to think quickly. A farmer friend of mine by the name of Brown was telling me a story the other day. He said he had one cow that had a bad habit, while being milked, of flicking its tail in his face. He tied a rope around its tail, and it hadn't dragged him around the barn more than a dozen times before, as he said, he realized he had made a mistake. He was a quick thinker, far quicker than some cost accountants who have been operating job order costs for a dozen years and haven't realized they have made a mistake. That was the same farmer, by the way, who told me that he bought a consignment of liquor from a bootlegger, and, naturally, as a milk dealer, being suspicious of adulteration, sent a sample to the druggist to be analyzed. He showed me the druggist's report which read as follows: "Dear Mr. Brown, I received your sample and analyzed it. I regret to advise that your horse is suffering from diabetes."

The outstanding feature of business today is that practically all industries are overequipped. Our producing facilities are practically unlimited whereas our consuming power is not so, and this has resulted in the extreme importance of adequate sales effort so that we can secure sufficient sales volume to take advantage of our mass production ability and realize the reduced costs which come from increased volume.

We come across case after case in business today where a 20% increase in volume means all the difference between a net loss and a substantial profit.

I think this is one of the first times in the meeting that we have linked standard costs in our discussions with the distribution department as well as with the production department. There was a slight error in the title of this session as it was given on the program. It was originally, "What standard costs are doing for the reduction of costs in the production and distribution departments," but it should be changed to include the word "budgets," so that the speakers today are really going to discuss the subject of "What standard costs and budgets are doing for the reduction of costs in the production and distribution departments."

There is no basic difference between standard costs and budgets. They are both based upon the fundamental idea of predetermination as opposed to the old idea of reporting events after they have

happened. Where a budget plan is used, you are in the position of a navigator on an ocean liner. There is a definite route laid down and there is a definite time schedule. Daily observations are taken showing the position on the chart. The navigator knows exactly how he stands in relation to the course he has laid down.

The savings resulting from the introduction of standard costs occur in two ways, first by reducing clerical work as compared with that required to operate job-order cost systems and secondly by eliminating wastes which the standard cost plan discloses. Illustrations of savings in both directions will be given to you by the various gentlemen who are going to talk to you this afternoon.

Before I close, I wish to draw your attention particularly to the economy of standard costs as compared with the old-time job order cost plan because this issue has been clouded by the introduction of hybrid cost plans which represent the superimposing of standard costs on job order costs with the result that the cost of operating the system is increased instead of being decreased. Those of you who attended the 1925 National Convention in Detroit will probably remember the discussion which took place at that time between our good friend and former President, Mr. Kemp, and myself on this phase of standard cost procedure.

In securing speakers for this afternoon's session, the endeavor has been made to have these speakers represent a wide range of industries including the manufacture of cigars, dry batteries, silverware, hosiery, safety razors, rubberizing of fabrics, cash registers, paper, chains and textiles. Some of the standard cost and budget plans which will be described were designed and installed by the accounting officers of the concerns themselves, others were designed by professional engineers and accountants. In connection with the latter I wish to take this opportunity of thanking Mr. Wellington, of Scovell, Wellington and Company, and my old friend and former associate, Mr. Eric Camman of Marwick Mitchell and Company, for the valuable assistance they have given me in preparing for this session by securing some of the speakers you will hear this afternoon. We have ten papers, and I don't think there will be very much time for discussion. What we propose to do is to have these gentlemen read the papers, and then if there is any time for discussion afterward, we will have it.

I am going to ask Mr. Howard Knapp of Waitt & Bond, Inc., to read his paper to us first. Mr. Howard Knapp!

## WHAT STANDARD COSTS AND BUDGETS ARE DOING FOR THE REDUCTION OF COSTS IN THE SALES AND OPERATING DEPARTMENTS

C. HOWARD KNAPP

Waite & Bond, Inc., Newark, N. J.

**I**N the short period of ten minutes allotted to this paper it will be a waste of time to generalize on the subject under discussion, and also we feel that the subject is so well understood by a great majority of those in attendance that anything we might say would add very little, if any, to the fund of knowledge and experience here represented. We will, therefore, state a few specific examples which may be interesting in respect to their connection with the subject.

The installation of standard operation costs in substitution for job costs was practiced before budgetary control was generally applied to business, so our first example will treat with operation costs. We were doing some work, professionally, for a company manufacturing hardware, and as thousands of articles were manufactured from a number of different kinds of metal, and as the management insisted that business policy demanded that production be on customer's selection of design rather than for stock, a rather complicated cost problem was presented. A job order cost system was being used, but on account of the tremendous detail and clerical work involved, the cost of a production order was not completed until quite a number of days after the job itself. About the only real benefit obtained from the system was that it made it possible for the accounting department to cost production and sales so that profit and loss could be ascertained and balance sheets figured monthly. Twenty years ago, however, when this experience took place, it was no small accomplishment for a company to know its financial condition without taking a physical inventory, so at least the company had a right to feel moderately up-to-date. The cost information, however, became simply a matter of historical record. About the only way to check up the various foremen on their departmental costs was to wait until the same article was manufactured again and make comparisons on the two jobs. As several months might elapse between repeating the same jobs, the

laborer's rate might change, the quantity produced might vary greatly, the material might not be running so well, or any number of the stock alibis in which foremen indulge might apply. A change had to be made if worth-while results were to be accomplished. Costs were put on an operation instead of a job basis. Certain articles that were the ones most frequently run through each operation were established as standard for that operation and called the 100% article for the operation. From time study and technical knowledge, the engineering department assigned to every article on every operation a percentage ratio comparable with the 100% standard article. For instance, assume that on the banking operation, Article A is the standard or 100% article; if 1,000 of Article B should take twice as long to blank as 1,000 of Article A, it would be a 200% article, and if 1,250 of Article C should be blanked in the same time as 1,000 of Article A, it would be an 80% item. The daily production was converted by use of the assigned percentage of each article produced to so many Article A produced, even though on a particular day there may not have been any of Article A in production. The daily labor cost for the operation, when divided by the Article A production as converted, resulted in a cost that was comparable day by day with the forecasted standard cost for the operation. If the daily cost varied unduly from standard, an immediate check-up was made as to the reason and many faulty conditions were rectified with a minimum of delay. Daily reports of labor cost went to the foremen, who began to show an interest in a system which they could readily understand. The cost of the individual article is not lost by its conversion, as a banking cost of 10 cents per 1,000 for the standard 100% article, means just as definitely a cost of 8 cents per 1,000 for the 80% article, and 20 cents per 1,000 for the 200% article. In the illustration mentioned, and in most cases, the clerical help necessary to operate a standard operation cost system is considerably less than half the number necessary properly to operate a job order cost system, and real benefits in the way of information and knowledge are obtained that make it possible to correct inefficiencies and losses greatly in advance of the time that attention can be directed to them under the other system.

During the past 20 years, we have found numbers of instances where the method just described can be used to accomplish equitable results with a minimum of effort. One of several rather inter-

esting ways of using it in the cigar business we will describe. We figure our costs by brands and packages in detail right up to the point of profit, if any. That doesn't mean that selling expense is taken as one item and applied as a percentage of selling price, or as so much per 1,000 cigars, for we believe it is just as important to analyze the specific items of selling expense and apply them intelligently to each brand as it is to do so with the various elements comprising manufacturing expense. In our business it is customary to pay the express or freight on outgoing shipments. Together with other items of selling expense that are more nearly controlled by size of package, rather than value, such as shipping room supplies and labor, it accounts for a very considerable item in the Selling Expense Report. Obviously, it is incorrect to charge Blackstone Cigars with an amount per 1,000, which is more than twice as much as that charged to Endicott Cigars simply because Blackstones have clear Havana filler and sell at two for a quarter, while Endicotts have domestic filler and sell at 5 cents straight. They weigh practically the same. The express and freight and shipping cases are charged on the basis of weight. We have established the Blackstone, put up 50 cigars in the box, as the standard package, and all packages of all cigars have been weighed, and their weight expressed in percentage based on the weight of the standard package being 100%. At the end of the month, the quantity sold of each package is converted to the quantity of Blackstones, 50 in a box, that its weight would represent, and the total of converted sales divided into the cost of the group of shipping expenses, to get the shipping cost per 1,000 of the standard package. If a cost of 15 cents per 1,000 of the standard package is obtained, it is obvious that the Blackstone Midget, weighing only 40% of its larger brother, would cost only 6 cents per 1,000 for that particular group of expenses.

The greatest opportunity for saving which we have in the manufacture of our product is in the application of the Sumatra tobacco as the wrapper for the cigar. This tobacco is very expensive, but it is possible to develop a great deal of skill in handling it, so that the experienced girl will wrap three or four cigars with the same leaf that an inexperienced girl will use for only two cigars. Standard yields per 1,000 cigars for each kind of tobacco on each brand are established and the weekly results compared with the standard. In addition, weekly results are computed for the indi-

vidual operators and for the groups under each supervisor. The records are posted in each department and the utmost publicity is given them. Each operator knows each week how she compares in efficiency with the other operators. Obviously, when it is necessary to lay off employees, those most consistently at the bottom of the list are the first to go. The efficiency in use of material by each operator is expressed in percentage on the blackboards weekly. When the percentage tables were established seven or eight years ago, 100% called for a yield per 1,000 cigars that seemed to be attainable by less than 10% of the operators, and the best performance that had been attained was 110%. Rivalry to be at the head of the list, and the knowledge that those at the bottom of the list were in danger of losing their employment has created a remarkable improvement. If the old percentage tables were still in use, all operators would now have records better than 100%, and the best operators produce 15% more cigars from a pound of tobacco than formerly. The economy in use of material results from the utilization on the cigar of tobacco which formerly went into waste, as the cigars never deviate in size and weight. Tobacco which became a by-product, and as such was worth about 20 cents a pound, is now used as a wrapper worth \$7 a pound. Similar improvement has occurred in the use of binder tobacco, with the result that our earnings are \$150,000 per year in excess of what they would be if the yields of seven or eight years ago still prevailed.

We use standard costs for Raw Materials, Labor, Burden, Incoming Freight Storage and Brokerage, Direct Supplies and By-Products, and are able to correct very quickly many unfavorable conditions that are reflected by variations from the established standard. Factory Burden is divided into two classes, Fluctuating and Fixed. Fluctuating Burden comprises those items of expense that should vary as production varies, and Fixed Burden comprises such items as Rent and Depreciation that are the same regardless of production. Almost no variation from Standard occurs on Fixed Burden as the amount unabsorbed is charged directly to Profit & Loss as Idle Capacity.

Our business has been operated on a Budget basis for the past five or six years, and we have succeeded in tying up our standard costs with the budget to such an extent that we could not eliminate either one without destroying the principal benefits obtained from

the other. In fact, it seems to us that to create an intelligent standard cost system it is necessary to collate most of the information needed to operate a budget, so one might as well have the budget system too. The first expense to which we applied the budget plan was advertising; it was done many years ago before we knew what a real budget system was, but in that department, as well as many others since put on a similar basis, a great deal of expenditure has been saved by first establishing a plan and then living up to it. We do not mean that because a certain amount has been set aside for a certain project, that no greater amount may be spent thereon, but there must be an overwhelmingly urgent reason for deviating from the original plan.

Our budget, obviously, begins with forecasted sales, and based upon this estimate, financial policy, inventories, production, and raw material purchasing are planned. As our raw materials have to be purchased from two to four years in advance of their use, the forecast assumes more than usual importance. We know from experience that it would be most hazardous to attempt raw material and inventory control without the budget.

In closing, we believe the best evidence that we may offer to show the benefits derived by Waitt & Bond from the use of a budget and standard cost system is to cite an experience that happened just a year ago. An attractive plan of public financing had been presented by a banking syndicate, based upon the earnings of the preceding year. We decided to accept the offer, but called attention to the fact that, due to a number of unusual conditions, the earnings for the first four months of the current year were greatly below the earnings for the corresponding period of the preceding year. Quite naturally, the bankers withdrew their offer until their auditors could investigate. We were able very easily to forecast our costs and earnings for the balance of the year, through our standard cost and budgetary control system, to the complete satisfaction of the auditors and bankers, who enthusiastically renewed their offer, and the auditors even bought some of the stock. Incidentally, when the year came to a close, the earnings were in excess of the forecast to the extent of less than 1%.

We believe that Standard Costs and Budgetary Control are so essential to the successful operation of modern business, that we would hesitate to make an investment in the securities of any com-

pany not enjoying the benefit of such a necessary aid in the prosecution of its affairs.

CHAIRMAN HARRISON: Thank you, Mr. Knapp. Our next speaker is rather well known to you I think, Mr. G. R. Lohnes, Comptroller of the National Cash Register Company, and President of the Dayton Chapter.

MR. G. R. LOHNES: Mr. President, Mr. Chairman, Guests, Members of the National Association of Cost Accountants, you know, at these testimonial meetings, we usually hear so much about savings that sometimes we hesitate to mention them because somebody might be a little skeptical as to whether or not all these savings have been realized.

Mr. Lohnes then read his paper.

## SAVINGS BROUGHT ABOUT THROUGH STANDARD COSTS

G. R. LOHNES

Comptroller of the National Cash Register Company, Dayton, Ohio

WE have had some experience in our plant with statements of so-called savings in the operating and sales departments. I recall instances where if all the anticipated savings resulting from certain proposals had been realized over a period of ten years, we would be manufacturing our product at no cost whatever.

The peculiar thing, however, was that after trying out some of these proposals they did not have much if any effect on the total payroll.

In view of these experiences I have always hesitated to state any stipulated amount of anticipated or realized savings as a result of accounting procedure. However, any hesitation on my part to mention a stipulated amount of savings does not in any sense mean that I do not recognize the great value of the standard cost system in use by us.

I wish, if possible, in the short time allotted to me to make clear to you the complications which arise in the installation of any cost system in our plant.

Let me say at the outset that I am firmly convinced that the

standard cost system is the only known system that would be practical for us.

In our forty years of experience in manufacturing cash registers, we have tried many systems and the one in use now is the only one we have found practical.

Our product is one that is made up of subassemblies consisting of many small parts. We carry in stock at all times in the neighborhood of 50,000 different parts fabricated from every kind of material: Wood, Copper, Brass, Steel, Glass, Rubber, Fiber, Paper, etc.

We operate our own printing plant in which we print all of the supplies sold for use with our machines, as well as our advertising matter and house organs. We operate our own foundry and pattern department, as well as the many necessary manufacturing and assembling departments. In addition to this, we manufacture much of the machinery in use in our plant, and nearly all of the machine tools used by us.

Our product is not a standard product in any sense whatever. There are as many variations in the types and kinds of machines produced as there are different kinds of systems in use throughout the country.

We build:

- Accounting Machines
- Posting Machines
- Analysis Machines
- Fare Recording Machines
- Departmentizing Machines
- Store Registers.

Besides the many complicated special machines built, there are over one million variations in machines which can be taken directly from our price lists.

This will give you some idea of our cost problem.

I recall some years ago, before our product reached its present complicated stage, we organized a Cost Department on the "Order System" consisting of nearly one hundred people and after this department had been in operation for over one year Mr. John H. Patterson, deceased, who was at that time President of our company, made inquiry as to the cost of a particular machine. The

Cost Department after some considerable time was forced to admit that they were not in a position to furnish the cost of any completed machine.

Well, that was the end of the Cost Department and to this day this department has lost its identity as a "Cost Department" and is now known as the "Factory Accounting Department."

I am sure that had we continued on this basis the expenses of operating our cost system would have increased rather than decreased. But, assuming that we would have continued with the 100 clerks we would have had a cost of operations of approximately \$130,000 per year. I ask you to contrast this figure with the present cost of operating our Cost Department with 20 clerks, amounting to less than \$30,000 a year. A saving of approximately \$100,000 a year in the expense of operating a Cost Department is something that should be given serious consideration by us as cost accountants.

In our efforts to be of use to the Management by furnishing information as a basis for operations, we should not overlook the cost of securing such information.

Furthermore, I wish to repeat that after operating on this expensive basis for over a year, our Cost Department had not reached any finality as to cost information. I feel sure that a number of concerns are still operating on the "Job Order Cost System" basis. This is perhaps due to the fact that they have not yet reached the stage in competition where it behooves them to take such expenses into consideration.

This reminds me of a story I once read in the *Wall Street Journal*. A sound sleeper was awakened in the middle of the night by his wife who requested him to get up at once as the entire community in which they lived was on fire. The husband drowsily yawned and stretched and arising from his bed felt the walls of the room in which he had been sleeping. Finding the walls still cool, he remarked to his wife that they had plenty of time because the walls were not yet hot and composedly returned to bed and went sound to sleep.

In considering the installation of any cost system we should take into consideration two very important factors:

1. The cost of operation, and
2. The information to be secured.

I have already contrasted the cost of operating a standard cost system as compared with the cost of operating on the Job Order Cost basis. Taking the second factor, the information to be secured from the cost system, it is my opinion that a cost system should enable us to secure such information as:

1. Determining costs to be used as a basis for establishing sales prices.
2. Accounting for manufacturing outlays.
3. Information to be used in establishing forecasts and budgets.
4. A basis for establishing standards.
5. Use of variances for efficiency data and determining current costs.

I believe that the Standard Cost System comes as near to furnishing such information currently as any system yet devised.

For a number of years we operated with specification costs which were largely based on estimates and while this answered our purpose fairly well it did not furnish us with any departmental efficiency data and, at the end of the year when we took our physical inventory, we were always faced with a large inventory adjustment.

Since the installation of the Standard Cost System, we are in a position to furnish our Factory Superintendent weekly with information which shows the variations of actual costs from standards, accounting for these variations by analysis which shows the variations to be due to:

Material Variations

Price of Quantity

Labor Variations

Due to Day Work

Piece-Work done Day Work

Temporary Piece-Work,

Etc.

And I am pleased to say that last year after taking out physical inventory our inventory adjustment was less than 1%.

We are in a position to furnish the current cost at all times and our cost system ties in with our general books.

All this is done by a department consisting of twenty employees.

In all ways I can safely say that the standard cost system has been satisfactory and in my opinion is the only practical method we could use.

CHAIRMAN HARRISON: I am inclined to think that if standard cost will work satisfactorily under the complex conditions Mr. Lohnes tells about they will do so pretty well in any place. We now are going to jump from cash registers to Gillette safety razors, and it gives me great pleasure to introduce Mr. Henry W. Maynard, Factory Accountant to the Gillette Safety Razor Company, who will tell what standard costs and flexible budgets are doing for the reduction of costs in the manufacturing department of his company.

### WHAT THE STANDARD COSTS AND THE FLEXIBLE BUDGET ARE DOING FOR THE REDUCTION OF COSTS IN THE MANUFACTUR- ING DEPARTMENT

The Experience of the Gillette Safety Razor Company  
Boston, Mass.

HENRY W. MAYNARD

Factory Accountant, Gillette Safety Razor Company, Boston, Mass.

**T**HE principal savings in manufacturing cost which have been made by the Gillette Safety Razor Company through its new standard cost system are due to the "flexible budget," which has proved to be the most effective and profitable element of the entire procedure.

Three years ago the Gillette Company undertook the installation of a standard cost accounting system, which in scope and thoroughness is believed to be unique in accounting annals. This system has now been in full operation for nearly six months, and while improvements in routine and method are still being made, the results of the procedure are sufficiently evident that the value of the whole structure may be judged.

It is not the intention of this paper to describe the system. For those of you who may be interested in pursuing the matter

further, a brief summary of its outstanding features is presented in the June number of *The American Accountant*, to which you are referred. From that article these opening paragraphs are taken for the purpose of outlining the method, principles, planning and constructive work which led up to the savings which will be described later.

The new system was to be adequate to give complete control. There was to be but one standard of work, the best that can be done.

To that end, authority was granted for the employment of a sufficient number of trained accountants. The new procedure was installed independently of, and without disturbing the existing system. Time was allowed in which to do the work properly (without untimely pressure for "results"), during a period of the company's prosperity and not (as is so often the case) under the urgency of a business depression. Most important of all, the work was undertaken at the instance of the heads of the manufacturing division, who wanted the control to learn their own shortcomings and receive credit for good work; and the manufacturing management were able not only to promise, but actually to deliver, the complete and hearty co-operation of all their foremen and executives. . . .

What we call the "Gillette problem" is simple in general, but most complex in its details. The company manufactures one quality of blade and about a dozen designs of razor which are put up in perhaps 100 different packages. The entire American manufacturing operations, including the factory and all the general offices, are located in a single group of six- and eight-story buildings with 550,000 square feet of usable floor space, where there are employed over 2,000 people. The plant is larger than such a number of employees would ordinarily indicate, owing to the large proportion of automatic machinery. The company has had an almost unparalleled record for prosperity and earnings.

I came to the Gillette Company in May, 1925, as factory accountant, with the principal assignment that of designing and installing the new system. There was then in operation a cost accounting procedure which was a good system as systems go. It was tied in with the general books. Inventories were charged with actual costs, and credited with a sort of average "fixed costs," and the annual inventory adjustment was not large. There was a very complete set of departmental expense statements. The costs of the products were calculated to reasonable accuracy. Yet the company's management realized that such a procedure was wholly inadequate to give the control required by modern industrial standards. The detailed statements of departmental expenses, which set forth the costs for "current month" and "last month" and

commented on the reasons for differences, were practically worthless because they failed to embody any true measurement, necessary to disclose improvements or "slippages" in efficiency and economy. Therefore it was decided to build anew from the foundation.

### The "Flexible Budget," Through Which the Savings Are Made

It was decided that wherever possible *standard costs* would be used, and carried into the inventories, and variances written off currently. As the installation progressed, and the usual "burden development" or calculation of the normal budget for normal activity got well under way, it became apparent that here was an opportunity to try out an idea which I had had for some years, of a "flexible budget" which should provide a precise and detailed comparison between the *actual expenses* of each month in each department, and the amounts *which should have been spent* for the actual production or accomplishment of the period. Some of you may remember that at the Chicago Convention in 1927, I put forth the suggestion for such a control and asked if any cost accountant had had experience with such a system, but no one came forward. Accordingly at the Gillette Company we proceeded to experiment. The foundation was carefully laid. The normal budget was based on "balanced production," with the output of each department adjusted to allow for spoilage and reoperation, to produce the amount of finished goods established as the basis of burden. A thorough expense analysis of past periods was made. Standards were carefully set.

The normal budget was to be kept up-to-date with changes in manufacturing methods; and also with changes in standard budget figures. The method provided that the up-to-date normal budget should be recalculated each month to agree (1), with the actual length of the working month; and (2) with the actual production of the period. The adjustment to production comes through the principle of "variability of expenses." Some expenses are wholly fixed and (we say) have "zero variability"; others change in exact proportion to production and are "100% variable"; other items are intermediate—we estimate that in most direct departments of the Gillette Company, supplies are "80% variable" as production rises and falls, and that repairs are "70% variable." Whatever

the basis, each item in each department is judged on its own merits and the basis of variation established.

As the installation advanced towards completion, we were still quite doubtful whether the flexible budget would succeed; the task of calculating each month a complete new budget for a dozen items of expense in more than sixty burden centers seemed so huge that we doubted if it could be accomplished at all within one month, and if so whether the cost would not be prohibitive. Then last November the clouds suddenly cleared away and we found that the budget method was operating smoothly and efficiently. Now the entire calculation each month is performed in but three man days. Its success in accounting operation has more than justified the care taken in planning and development.

This flexible budget, let me repeat, is but one phase of our standard cost system. On the original normal budget used as the starting point, the standard costs are based. These are "accounting" standards which are changed only twice a year, and at which values the inventory accounts are kept. But each change in the "up-to-date" budget gives new standard costs; these are "current standards." On them all managerial reports are based. The differences between the "accounting" and "current" standards are written off each month as variances due to change in method, design of product, or budget allowance. Every six months the inventories are to be recalculated at both the "accounting" and the then "current standards," and the latter become the new basis for inventory calculation.

### **Labor Savings Had Already Been Made**

The greater part of labor savings possible in the ordinary case, however, had already been made before the new cost system was ever started. The Gillette Company is operating under a premium system of wage payment and nearly all of the employees of the company, including a fair number of office workers, are paid on that basis. The system has been profitable, and most of the possible savings in both direct and indirect labor have already been made. Therefore the possible savings resulting from the new standard cost system and its "flexible budget" are largely limited to factory overhead, and, to a somewhat less extent, to material.

Furthermore, this factory has been exceptionally well managed, as evidenced by the company's record of prosperity, so that

there was probably somewhat less waste than there would be in the ordinary plant.

### **Monthly Reports—the Means for Securing Savings**

The practical value of the system—the means by which savings are made possible—lies in the monthly statements. These compare actual expenses (by departments and by kinds of expense) with the amounts “which should have been spent for the actual production or accomplishment of the period” and are in considerable detail, with a book of departmental expense statements, and two books of details on materials and supplies, and repairs. They are also summarized by manufacturing departments and for the factory as a whole, and are preceded by a text of high spots which calls attention to the outstanding points for the month. Or to look at it in another way, the director of manufacturing receives a report which opens with a text of high spots calling attention to the outstanding points for the month, with a summary giving on a single page a condensed report of the effectiveness of his entire responsibility for the month. As he wishes to look farther, perhaps to individual departments and items of expense, the detail is ready at hand, with further supporting detail beyond that, so that scarcely a question regarding the financial side of factory operations can be asked but that the answer is ready in the three books placed in his hands.

The operating statements show gains and percentages in green—safety; and losses in red—danger. Thus the director of manufacturing and his representative can pass readily over the great majority of cases where accomplishment is satisfactory and concentrate their attention on the few cases which need executive attention.

Each budget figure (outside of changes in method of manufacture) is guaranteed for six months, so that a foreman's gain during that period will show up clearly. At the end of each six months we plan to revise the budget and tighten up on the standards, throwing green gains into red losses; we make the foreman “see red.”

### **Analysis of Reports by the Manufacturing Department**

But the mere delivery of reports does not secure savings; an additional function must be performed. At the 1927 Chicago Con-

vention I made the statement that the enforcement of economies is not a function of the cost accountant; that the cost accountant's job is ended when he has presented the facts to the management and has called attention to the outstanding gains and losses; and that if he proceeds farther—if he goes into the factory to enforce economies, he ceases *to that extent* to be a cost accountant and becomes a manager.

The Gillette Company agrees wholly with that principle. They assigned a capable man, whose entire time is devoted to the study and analysis of these statements, and whose task it is to secure savings in the factory—the function of cost analysis and control which every company needs but which most companies have been exceedingly lax in instituting.

The cost accounting department, let us say, reports that repairs in a certain department are \$1,000 higher in May than in April. We as cost accountants do not know whether this high repair cost is justifiable or not—we merely point out the facts. The manufacturing department representative, who deals with the foremen with authority (as an accountant could not), investigates the matter and gives approval or disapproval to the manner in which the maintenance of the department in question is carried on. Certainly after such an investigation, capably dealt with in a definite way, future repair and maintenance charges in that department will far more closely yield the company one dollar's worth of return for each dollar spent.

### The Budget in the Factory

To the representative of the manufacturing department, Mr. G. Macy Wheeler, and to the general foremen of the blade and handle (razor) divisions, are due a large share of the credit for the successful starting of the budget in the factory, and for the savings which have resulted. A few of the comments made by Mr. Wheeler, after about three months of budget operation, follow as an interesting commentary.

The budget started off well in the factory. It was presented by the two general foremen to the foremen under them in a very effective way. Each foreman received three distinct impressions: (1) that the management is clearly in earnest in its intention to make the budget operate as intended; (2) that it will be of real benefit to the company; and (3) that the budget is no excuse for not getting out production. After they

had been made to realize that they would not need to become accountants (although they were learning a little accounting without knowing it) they become more amenable to the new idea. One group saw at once that the budget would help them, and required no further convincing. A second group feared that it would upset their departmental premium and cost them money; they were roared back at as loud as they bellowed, which brought immediate action, for they did not mean what they said, and now all of this group is wholeheartedly in favor of the budget. A third but fortunately much smaller group talked wordily but aimlessly on the wonders of the budget and what they themselves would accomplish; they started with big words and tackled the easiest things which could mean only small savings; but when they came to the hard places they had many excuses; they could do no better and wanted someone else to come and show them what was to be done. This situation, however, has been improved, and is now in a way to be straightened out.

In some departments, in certain instances of controllable expenses, the accounting bugaboo has so far retreated into the background that the foremen actually keep daily records of their standard allowances and compare the actual costs against them, and the manufacturing department co-operates in giving them information.

The reaction after the first figures came out, one month after the foremen had been introduced to the budget, proved very satisfactory. Nearly every foreman realized that his monthly departmental expense statement was a measure of his effectiveness, and he was most anxious to "go over the top." It gave the foremen another means of controlling the workers, and some of them soon realized it added to their prestige as well. The eagerness with which they are now awaiting the monthly figures shows that these data have an appeal like that of the stock exchange tape—combined with the still more important feeling of pride in self-achievement.

In several instances, the foreman has already grasped the idea that his department is a little business all of his own, on which he is to show a profit. Others are gradually coming to realize the same fact.

The management has found that its foremen fall into three general classes—good paper men and fair production men; good production men and poor paper men; and good all-around men.

The general foreman of the razor (handle) division, Mr. Louis Gale, prepared on his own initiative a set of clever "Budgetisms for Foremen." He has impressed on all his foremen the principle—which, as you will all certainly agree, shows a surprising breadth of view from a man born and raised in a factory and not a technical graduate like Mr. Wheeler—that "*the budget, the premium system, safety and production are equally important.*"

### **Actual Savings Made**

How much actual saving has been made? We are making haste slowly. This is the only possible way in which permanent and

useful progress may be secured. The books of the company were swung over to the new system as of January first of this year, and the foremen have been acquainted with the budget since March. We took our time to design and install the system—wasting neither time nor money, but also sparing neither time nor money when to spend them was necessary. The same principle is being followed with the budget economies. Coöperation must come first. The manufacturing department must slowly and steadily lead the foreman to appreciate the purpose and need of budget control, to bring him to understand the figures, to interest him in possible savings, and to inspire his enthusiasm for the successful operation of his own little "factory." Yet actual net savings are already apparent—above the cost of maintaining the entire standard cost system itself and the time devoted to budget by members of the manufacturing department. As stated, the foremen were introduced to the budget in March. In May the net savings has passed an average of \$50,000 per year, and now they are marching towards \$100,000 per year. By the end of 1928, after the first year of full operation of the new system, the net savings over current operating costs of the system will undoubtedly be much more than sufficient to cover the entire installation cost of the previous three years, and beyond that time the savings will be all velvet. The first \$100,000 per year is the easiest to achieve, as previously unappreciated leaks are closed. The second \$100,000 per year will be harder to get, and beyond that the real pull begins.

### **The Disclosure of Monthly Fluctuations**

But strange as it may seem, perhaps the greatest value of this standard cost system and budget lies not so much in the cash savings in the factory, as the manner in which expense fluctuations are shown up. Each month we are surprised by the clarity with which, by the definite measurement against actual accomplishment, there appear in individual items in various departments surprising alternate gains and losses, which under the old system would have been entirely hidden, or at the best would have merely been an indication of a general trend. The principal thought in the minds of the directors when they gave approval for the installation of this system was the safeguarding of the existing earnings of the company, and we are certain that no major dangerous trend could move far without being brought within the spotlight,

One point is certain, and this is one of the most important factors to the entire cost accounting profession. A cost never stays fixed. A saving once made is never necessarily permanent. The most dependable cost, the best established saving has a perfectly wicked way of dodging around and striking you in the back as soon as you turn your head. The most constant watchfulness by a strong factory accounting department is the only possible way by which earnings and savings may be safeguarded.

(CHAIRMAN HARRISON: Our next speaker is going to be Mr. Henry Boston, Cost Accountant of the Stevens & Thompson Paper Company, North Hoosick, N. Y. Mr. Boston!

Mr. Boston then read his paper.

## EXPERIENCE OF THE STEVENS & THOMPSON PAPER COMPANY WITH STANDARD COSTS

HENRY R. BOSTON

Stevens & Thompson Paper Company, North Hoosick, New York

**I**T is not my expectation that I will be able, in this talk, to contribute anything really new to the knowledge of Standard Cost Systems which the members of this Association have. Nevertheless, it seems to me that a discussion of the experience which any one company or individual has had in operating a standard cost system should prove of value and possibly shed additional, if not new, light on certain phases of the subject.

I remember reading some time ago what seemed to me at first a startling statement. This statement was to the effect that a perfect cost system is one which will eventually function itself out of existence. At first glance, this seems a contradictory statement but a little analysis will show that such a condition is possible although perhaps not very probable.

In the first place, my contention is that a cost system should be operated primarily for control purposes; and secondly for purposes of a historical nature. If an organization could so control its expenditures for materials, labor, and burden that the cost of manufacturing its product from one period to another varied not at all, obviously there would be no need for a cost system. Since

this Utopian condition does not and probably cannot exist, we must have cost systems, and the control methods which can be exercised through the medium of standard costs will bring us nearer to this goal than any other method that I know of.

Since the general theory and practice of standard costs have already been discussed at previous conventions of this Association, I will confine my remarks to pointing out what I consider to be the chief advantages of a standard cost system as compared with other types, notably the job order system.

The Stevens & Thompson Paper Company operates three paper mills, each making a widely different product and each operating as an independent unit. Cost ledgers are kept at each plant and are tied in with the general books which are kept at the main office.

From the standpoint of financial control, the following results have been obtained through the use of the standard cost idea:

1. Inventories have been reduced 20% and the amount of money tied up in inventories is controlled so that only about 10% variation occurs during the year. This variation is largely due to the seasonal nature of some of the lines which are manufactured.
2. The amount of money spent on capital additions is budgeted and better controlled than formerly.
3. The cost of manufacturing the product has been controlled to such an extent that at one mill variations from the standard cost for materials, labor, and burden are only one-half of 1%; and at the other mills about 2%.
4. Proper piece rates for labor have been more accurately determined.

From the standpoint of accounting, the following advantages of a standard cost system should be enumerated:

1. The cost of operating the accounting department has been reduced 40% as compared with the old job order cost system.
2. Complete profit and loss statements for each mill are obtained within six days after the close of the accounting period as compared with two weeks under the old methods.

3. Analyses of all variations from standard costs are presented to the executives along with the profit and loss statement—such analyses under the old system usually required anywhere from one to two days extra time of the cost accountant.
4. More accurate valuation of inventories is possible under the standard cost method.

The above-mentioned results have been obtained by the application of the standard cost plan to its fullest extent in our paper mills. Standards are set for prices and quantities of materials used, machine production, labor, and in fact every department operates with standards set for it. Surprising results have been obtained in lowering costs and increasing production by showing to foremen and superintendents a weekly comparison between actual and standard performance on each machine for every grade of paper made.

This system has been in operation about six years and during the first eighteen months it was found necessary to revise standards three times. Since then, however, standards are revised once a year and it requires about ten days to two weeks time for the cost accountant at each mill to get out a complete new set of standard costs which will apply during the following fiscal year.

Thus far the standard cost idea has been applied only to the manufacturing end of the business. Our ultimate aim is to apply it also to the sales division and eventually the results obtained in this field should be commensurate with those obtained in the manufacturing division and be productive of just as great savings in the cost of distribution as have been effected in the cost of manufacturing.

**CHAIRMAN HARRISON:** We will now hear from Mr. H. E. Parkman, Comptroller, F. C. Huyck & Sons, Albany, N. Y., manufacturers of textiles.

## EXPERIENCE WITH STANDARD COSTS IN THE MANUFACTURE OF TEXTILES

H. E. PARKMAN

F. C. Huyck &amp; Sons, Albany, New York

THE company with which I am connected manufactures several products from wool, one of these being paper makers' felts. You who are more familiar with paper mills know what the woolen felt is—it is an essential part of the paper-making process, and in each mill, on each machine, there are used from one to four different types of felts. We also manufacture Kenwood Blankets and Kenwood Cloth.

Up to about two years ago, our accounting was on a job order basis, and I think it was logically so. Felts are an individual product. We have about 150 different designs to fit the needs of different mills and each of these designs is made in a number of sizes. Paper machines are not standard and the felts have to fit the machine. This condition would surely call for a job order cost if the job order cost is ever warranted. The job order cost was satisfactory in determining selling prices, in costing sales and in controlling inventories.

We had departmental expense statements which we showed to the foremen for a time. The foremen were not able to understand them very well and soon lost all interest in them. Our management felt that while the cost accounting was adequate for the purposes I have made, it failed in giving any control of factory expense. In order to overcome this difficulty, we started a year and a half ago to operate a standard cost system. We did it without the idea of reducing clerical help. We wanted to get the executive control of factory expenditures.

In developing our standards, the foremen were called in and they co-operated fully. The foremen practically fixed their own expense standards. They were also consulted in the fixing of all production standards or standards of output. As soon as we began the operation of the standard cost system, the foremen were given, not the old summary statement they received before, but a statement showing their variation from standard cost. This was some-

thing they could understand and they set to work wholeheartedly to reduce their expense to standard.

As I said, we had no idea of reducing clerical effort in our cost work. Its application, however, is quite different. Instead of compiling cost of individual jobs (which cost is never used) we spend the time in producing statements which are given to the foremen and are used.

In going to standard material costs we developed a series of waste reports which are given to the foremen, getting them with the same clerical force that we had before, and that particular feature has resulted in saving amounting to about \$100 a week.

The results that we have had so far from our standard costs have been increased coöperation of the foremen, with reduction in costs, and I have tried for this meeting to measure those reductions, but I must say it is a very difficult thing to do. The standard by which we judge the factory largely is through ratio of expense to standard. That went down from 147% when we started the cost system in the first month of operation to 120% at the present time; eliminating the idle time loss, the ratio went from 140 down to 110. That may not be a fair measure of our saving. However, during the year 1927, several improvements were introduced in our products, all of which tended to increase the cost. With those improvements our cost now is no higher and, in some cases, it is lower even than it was before we adopted standards.

In setting standards, there was a little by-product of results. We found that certain types of operations which had been going on for many years and were believed to be the best methods of doing things, were not the best. The studies that were made for developing standards showed that there were better ways of carrying out those processes.

The good results which we have found have been very real reductions in cost, better spirit of coöperation, and better results from our clerical work.

**CHAIRMAN HARRISON:** Mr. D. W. Tyrrell, of the French Battery Company of Madison, Wisconsin, has found it impossible to get away from Madison, and so I have prevailed upon Mr. Albert Brown, Manager of the New York Branch of the French Battery Company, to read Mr. Tyrrell's paper.

Mr. Brown then read the paper prepared by Mr. Tyrrell.

## BENEFITS DERIVED FROM A STANDARD COST SYSTEM

D. W. TYRELL

French Battery Company, Madison, Wisconsin

**I**N presenting a paper before this body of experts on costs, I am doing so as a layman, presenting the experience of one individual concern in one individual industry, with standard costs in relation to the methods used before the installation of the same. I am not attempting to say what can be accomplished in other businesses or industries, since the accomplishments are purely relative within the individual concern itself. At Mr. Harrison's request I am giving you enough material to show that the benefits derived from our installation were well worth while.

I am sure you would not be interested in listening to a long dissertation on the detailed operation of any cost system since your study and practice has brought you in direct contact and made you familiar with such systems at present in use. However, in order to give you a basis to consider and develop your own opinions as to the very broad statement of savings which we present to you hereafter, we must state briefly the type of system used before the installation of standards.

Materials under the old system were disbursed into process at actual figures by taking the raw material inventory at the first of the month plus the purchases minus the inventory at the last of the month. The material figure used for pricing goods into completed stock was merely an arbitrary figure including an allowance for waste which did not insure the clearing of the process inventory but rather the opposite, in that our experience showed that we continually were building up a fictitious process inventory account. As a result there was no information for controlling waste or indication of the efficiency of the use of materials.

Labor was handled under very much the same method, the figures were cumulated by operations, each operation being kept separately, showing productive hours of work and earnings. These figures were added at the end of the month into total figures, which required considerable time.

The labor used in pricing completed stock was again an arbi-

trary figure and did not insure clearing of the process inventory but accumulated an additional amount, increasing the fictitious inventory referred to before.

Burden was distributed in a very detailed manner under the old system, making many distributions with each department carrying a separate rate of burden. These distributions were made to forty-five productive departments and sixteen non-productive departments, being distributed to operation based on the cost per productive hour. Under this system unabsorbed burden was left in process due to the arbitrary manner in which goods were priced into completed stock. Although very detailed, this burden meant very little to us and gave us no control information whatsoever.

As we have stated above, we accumulated in process fictitious inventories of material, burden, and labor, which necessarily had to be adjusted at each physical inventory period. You can readily see that our cost and accounting information was of no value and was very misleading. Not only that, but the results which were obtained did not come to the attention of the executive concerned until about the twenty-fifth of each month, which was too late to be of any value even had the information been accurate.

It is not necessary for me to explain how we are operating now since basically standard cost systems as I understand them are very similar. As a result of the installation of a standard cost system we have accomplished the following:

1. Compiled more accurate costs both for operations, processes, and individual products.
2. We have eliminated the confusing and clumsy inventory adjustments.
3. We have provided a basis of control for labor, material, and burden.
4. We have provided a basis for the study of the efficiency of the various elements of our processes.
5. We have reduced the cost of our Cost and Payroll Departments.
6. We have speeded up the time of obtaining our factory cost and reporting them to our branch house accounting department by approximately twenty days.
7. This system provides a sound basis for budgeting.
8. Through the application and use of all features of this system we have saved many thousands of dollars.

Let us discuss more in detail a few of the items listed on page 314.

It is interesting to note that under the old system we had ten people working at a cost of \$1,110 per month. The new system requires six people at a cost of \$650 per month. These people are handling both cost and payroll.

Another interesting feature of the use of standard costs in our plant is application to budgeting. We have a very seasonal business and no two months' production are the same. We set up budgets for materials, direct labor, and burden as percentages of standard. In the case of materials a percentage of standard material is used. Labor in the same manner is based on the standard labor. Burden is fixed by accounts, by productive centers, and by classification of accounts for general distributive overhead, as a percentage of standard direct labor within the department or productive center concerned, and in case of distributive overhead of the total standard labor. Through our cost system we then accumulate standard figures which automatically give us a basis for compiling a control budget against which we can make direct comparison and by this means we are enabled to check the efficiency of every element of our production.

Due to the use of standard costs and the daily accumulating of total figures we are able to draw off current reports which were impossible under the old system. We divide our month into four periods and make a complete and detailed report for each period, which is available after the second day of the next period. This, as stated before, was impossible under the old system and we therefore did not know until the information was ancient history what the results of our operations were.

We have talked about saving many thousands of dollars for the French Battery Company through the use of this system. This, of course, is not readily swallowed as fact by a body of this type, without the furnishing of some concrete evidence in figures as to what these savings have been. We therefore present the following statistics as evidence of our sincerity of statement. The figures show the actual as a per cent of standard for the years 1926, 1927, and the first three months of 1928. 1926 was the first year we used standard costs. Additional progress would be shown could we compare with 1925.

TOTAL.	1926	1927	1928 (3 mos.)
Actual Direct Labor.....	108.39	97.49	89.45
Indirect Labor .....	12.50	11.64	9.59
CENTER G—FLASHLIGHT CELL ASSEMBLY			
Direct Labor.....	112.92	97.61	94.52
Indirect Labor .....	7.62	5.29	4.54
CENTER N—STANDARD CELL AS- SEMBLY			
Direct Labor.....	121.11	103.88	102.02
Indirect Labor .....	11.37	9.05	6.76

You can readily see from these figures we have made progress in the right direction. While some of our centers may not have made as much progress as these shown above, the total as shown in the first items above will represent an annual savings of approximately \$175,000. Material and Burden have also shown similar savings.

In summing up the situation, we have been very well satisfied with the result of our standard cost system and can attribute in a great measure our reductions in cost during the past two years to the information which was given us through this method of compiling our costs of manufacturing. While our system is not perfect, we are continually striving to improve it and believe that this type of cost accounting is as good as any we might use, and better than any into which we had ventured heretofore.

CHAIRMAN HARRISON: I am sure you gentlemen will agree that a saving of \$175,000 is not such a bad showing for standard costs. Now I will ask Mr. Lloyd Mogel to tell something about the results obtained by standard costs in his plant.

### BUDGETS AND STANDARD COSTS AT NOE EQL TEXTILE MILLS, INC.

LLOYD F. MOGEL

Cost Accountant, Noe Eql Textile Mills, Inc., Reading, Pa.

**P**REVIOUS to the installation of standard costs in our plant there was a system for estimating costs which were estimates only from which it was impossible to furnish monthly statements

as there was no tying-in with the books of account. Statements were prepared on the basis of physical inventories at intervals of about six months. In the present cost system we use standard costs from which we develop actual costs which are in accord with the books of account. We prepare monthly Balance Sheets, Profit and Loss Statements, and supporting statements. Practically the same clerical labor as was used in the former system gave us additional information and reports which were of greater value.

The use of Budgets and Standard Costs in our plant is an example of such application in a small establishment. Though we do not have an elaborate budget system, we have applied budgets to Sales Expected, Selling and Delivery Expenses, Manufacturing and Administration Expenses. From these budgets we calculate for standard costs the Standard Manufacturing Expenses, the calculation of which is budget divided by normal production; and Standard Selling and Delivery Expenses, the calculation of which is budget divided by budgeted sales. Actual expenses are to be controlled by policies to conform with standard.

Through their use it was possible to make a budgeted statement of Profit and Loss of what the expected profits were to be, using the expected sales or budgeted sales and applying expected costs and budgeted expenses. The actual Profit and Loss Statement is compared with the budgeted statement and analyzed as to cause for variance from expected profits. All causes affecting variances in Net Profit can be classified under the following six headings:

1. *Price and Margin Variance.* This is caused by a change in selling price or a change in composition of sales including items with more or less margin. The only practical method of ascertaining this variance is through standard costs. For example, if the margin between total sales and total standard cost of sales decreased from margin in budgeted statement, this would mean that the price has been reduced on the products sold or that the different commodities sold include more of the low margin products than expected, consequently reducing the average margin.
2. *Volume Variance.* This is caused by selling more or less physical units than expected in budget.
3. *Normal Selling Costs.* With an increase or decrease of

- volume there is an accompanying normal change in Selling Costs which are deductions from the volume variance in order to obtain the net change in net profits due to volume.
4. *Manufacturing Cost Variance.* A change in the manufacturing costs of the product sold from the budgeted or estimated cost would likewise cause a variance in net profits.
  5. *Idle Capacity or Unabsorbed Manufacturing Expense Variance.* Capacity in current operations, or, expenses absorbed varied from budgeted amount causing a variance in net profit.
  6. *Abnormal Selling Costs Variance.* Selling Costs varied more or less than the normal accompaniment of expense with change in volume, causing a variance in net profit.

Briefly I want to bring to your attention what these variances revealed.

In one month the margin variance revealed a downward trend in margin. The statements showed an increase in total amount of sales of 5% over the budgeted sales and a decrease in gross profits of over 5%. The actual quantities sold were actually 18% higher than the budget or a gain in profits of \$16,000, but these were sold with a loss in margin of 11% which amounted to over \$25,000, exceeding the profits made on the increase of volume by \$9,000. The main cause contributing towards this loss in margin was our styles 1601 to 1610. The actual volume of these styles sold under the direct selling plan showed an increase over the budget of 57% or a gain in profits of \$11,000 due to volume, but this volume of 157% was sold at a margin loss of 30% or \$18,000 loss. This was due to cutting sales prices in order to obtain more volume. The question then arises, "Was it worth while selling this extra volume with less net profits?" Out of the loss of \$9,000 on margins during this one month, styles 1601 to 1610 were responsible for \$7,000 loss.

The volume variance for the foregoing example showed an increase, but as stated before, this gain was lost due to margin decrease on styles 1601 to 1610. In other periods these styles had a continual loss in volume in the face of price reductions. As these products could not be sold at a satisfactory margin and as the volume was not forthcoming with lower prices, the quality of styles 1601 to 1610 being too high to insure margin and volume, their

manufacturing was discontinued. The withdrawal of these lines resulted in eliminating continuous losses, the saving of which meant about \$100,000 per year for all variances.

The manufacturing cost variance in a detailed analysis revealed in one period an excess usage of silk material for style 1200, which amounted to 5% of the total cost of the product. An investigation showed that the adjustments on machines manufacturing style 1200 had been changed from standard specifications to knit a finer stitch but still giving the same length stocking. A change in the construction of the product was made to remedy this usage loss, saving 5% of the total cost of style 1200. This saving amounted to over \$2,000 in one month.

Unabsorbed manufacturing expenses in further analysis called attention to abnormal departmental expenses for abnormal reworking expenses such as reclaiming damaged and soiled merchandise; inefficiency of departments which had a downward trend caused by taking on less efficient help; and idleness of equipment. The idleness of the departments manufacturing styles 1601 to 1610 mentioned in connection with margin and volume variances amounted to about \$40,000 to \$50,000 per year. The sales did not reach the volume necessary to keep these departments profitably engaged. This was another factor influencing the withdrawal of these products. Another abnormal expense was due to a policy for allowing for adjustments or changes on knitting machines. When this was found to far exceed the budgeted amount, a change in policy resulted to reduce this loss, saving from \$2,000 to \$3,000 per year.

Abnormal Selling Costs Variances called attention to abnormally high costs for the Direct Selling Plan and in selling styles 1601 to 1610. Special efforts to sell styles 1601 to 1610 caused abnormal expenses of about \$20,000 which was eliminated upon their withdrawal. Under the Direct Selling Plan representatives sent orders to mill, and delivery was made direct to the consumer by Parcel Post, C. O. D. This plan resulted in many returns and adjustments and heavy distribution costs, necessitating exorbitant selling prices to consumers. As the volume under this plan decreased and expenses were abnormal for the low volume, a change in this plan of distribution was made whereby the merchandise was sold to representatives who made deliveries and collections personally. This reduced the distribution costs about 60% by reducing the

cost of shipping, handling returns, and adjustments and clerical labor in recording and accounting for sales. In this plan instead of paying a commission to the representative, his commission consisted of his profit in resale of merchandise. The savings of this plan went to the consumer in a reduction of 30% in selling price.

It is understood that the major items for each of the variances did not occur in the same period. But there always may be a combination of several variances present in any period.

So from the foregoing our greatest saving in production and distribution costs was due to change in policies which eliminated the unfavorable items.

CHAIRMAN HARRISON: Mr. W. C. Ettershank, of the American Chain Company, Bridgeport, Conn.

## EXPERIENCE OF THE AMERICAN CHAIN COMPANY

W. C. ETTERS HANK

American Chain Company, Bridgeport, Conn.

**T**HERE is no doubt that all cost systems have benefits, but I believe that the benefits obtained through the operation of a well-organized standard cost system are far greater than those resulting from the so-called individual or job cost method of cost finding.

Ask ten accountants what goes into costs and you will get the same formulas:

1. Cost of Material + Direct Labor + Factory Expense = Factory Cost.
2. Factory Cost + General Expense = Cost to Make.
3. Cost to Make + Selling Expense = Cost to Make and Sell.
4. Cost to Make and Sell + Profit = Selling Price.

These formulas have been the same as long as I can remember and in all probabilities will remain the same although some accountants may phrase them differently.

It is not my intention to enter into a discussion of the different kinds of cost figuring procedure such as process costs, job costs, standard costs, etc., but to simply bring out the fact that our main

difficulty today is the variation of opinion of individual accountants on the application of cost principles.

A Scotchman who operated a picture show in the city of Edinburgh was not getting enough volume. He talked the matter over with his friends and someone suggested that he go to London and get some merchandising ideas. Outside a London movie was a sign which read, "All persons over 80 admitted free." The Scotchman and his friends all agreed that he must advertise. When he finally produced his sign it read, "All persons over 80 when accompanied by their parents admitted free." Here we have a good illustration of the application of principles.

Based on practical experience the purposes of a cost system should be to supply information and standards by which operating efficiency and production may be supervised and judged.

The various department heads must also have sufficient information for their guidance in purchasing and selling.

There seems to be some doubt as to who originated the idea of standard costs and there also exist wide differences in opinion as to the meaning of the term standard costs.

This to me is immaterial provided one realizes that every bit of material in the plant can be used at 100% efficiency or less, that every bit of energy paid for can be used at 100% efficiency or less, and that time can be used in the same way.

We know that things do not happen, that there is a cause for every effect.

Therefore in order to obtain the maximum of efficiency we must have standards set covering material, labor, and expense and these compared with the actual results.

$$\text{Standard Cost} \div \text{by Actual Cost} = \text{Efficiency.}$$

To me standard costs represent values set after having made a careful analysis of all factors affecting cost and established by authority as a model for measuring or comparing.

This is accomplished through the comparison of standards and actuals.

I would summarize the benefits derived from standard costs as follows:

1. Closer factory control.
2. Provide basis for foremen's bonus.

3. Elimination of compilation of so-called actual or job costs.
4. Reduction of personnel in cost department.
5. More intelligent basis for establishing selling prices.
6. Comparisons are current rather than historical and variations from budget figures are immediately and forcibly brought to the attention of the proper executives.

I believe the best way I can prove that standard costs have not only benefited our company but the foremen as well, is to give you the true facts pertaining to one of our small companies.

Standard costs were used during the entire year of 1927.

Time standards lead logically to a bonus plan. When you make it possible for a workman to increase his pay check you establish a sure incentive. If the standards are not fair to workman and company alike, the plan destroys itself.

On December 10, 1927, we notified all foremen that beginning Jan. 1, 1928, a Foremen's Bonus Plan would become effective and we believed that every foreman, with increased effort and initiative, could add to his present earning power.

A bulletin was forwarded to each foreman explaining to him just how the budget figures were arrived at and advising him that the company would pay a bonus of  $33\frac{1}{3}$  cents on every dollar that was saved on the budget that had been set up for his department.

We also called the foremen's attention to the way they could save money on this budget:

1. Economize on the supplies now used. Make them go farther by eliminating wasteful usage.
2. Reduce the non-productive labor in your department.
3. Combining of jobs where possible will mean a reduction in your non-productive force.
4. Watch repairs closely and see that they are made as cheaply as possible.
5. Reduction in scrap losses is equivalent to increasing production.
6. Keep men on piece rates where you have them.
7. Get the maximum efficiency and combinations out of your equipment.
8. Reduce non-productive labor to a minimum when slack operations occur.

9. The saving of a dollar in expense is  $33\frac{1}{3}$  cents earned in bonus.

### How the Bonus Is Figured

The average production obtained from each department for the budget of expense was set up, which showed the average cost per unit of production to be allowed. The actual production each month is figured at this standard allowance, which represents what it should cost to produce. The actual expense of the department for the month is also collected. The difference between the actual expense and the allowed expense determines the amount of savings made and it is on those savings that the bonus is paid.

Benefits accrued are shown by the following statement of one of the productive departments:

COMPANY NAME			
Department 1—Forming		Foreman—John Smith	
	<i>Budget</i>	<i>January</i>	<i>April</i>
Total Operating Expense.....	\$1,191.92	\$1,031.13	\$1,072.50
Production Machine Hours.....	3,550	3,212	3,302
Burden per Machine Hour.....	.335	.321	.325
Gain on Burden .....		\$ 44.89	\$ 33.76
Gain on Labor.....		24.73	12.50
Net Gain.....		\$ 69.62	\$ 46.27
Bonus Earned $\frac{1}{3}$ or .....		\$ 23.20	\$ 15.42
Savings to Company.....		\$ 46.41	\$ 30.84

I might state that 40% of the bonus earned each month is paid in cash and the balance is credited to the foremen's accounts to take care of penalties and the balance is paid at the end of the year.

A standard cost system properly installed will remedy the following conditions which exist to some degree in many large organizations:

An investigation of your present bonus system will show that less than one-half of the controllable expense, which is possible to control through foremen's bonus, is being directly controlled at the present time.

You will find non-productive departments and some productive departments share in bonus on performance of productive departments without regard to expense increase or decrease in the departments themselves.

Some non-productive departments are paid a bonus on the decrease of expense per man hour, which means by increasing the payroll a bonus is earned, because expense per man-hour decreases. There is no control on the amount of labor going into shop orders which is a large percentage of total labor of maintenance departments.

You will find that some schemes of productive labor control have been established. I am thinking of a company that was recently acquired by us where an average unit of labor per pound was the measuring stick in most departments. This scheme was basically unsound in every department where there was more than one labor rate. On the other hand, if all labor was performed on the present piece rates, there would be no chance of making productive labor savings, whereas day-work labor savings can only be measured by comparing actual labor with a predetermined standard allowance for the same work.

Bonus units should be set up on the same basis as overhead distribution so that savings will be measured in terms of decreased costs as shown in overhead savings directly applicable to products.

A standard cost consists of:

1. Standard Material Cost
  - A. Standard quantity required
  - B. Standard purchase price
2. Standard Labor Cost
  - A. Standard time required
  - B. Standard labor rate
3. Standard Overhead Cost
  - A. Standard time required
  - B. Standard overhead rate

The benefits derived from Standard Costs based on the experience of our company are as follows:

1. Better Yield—controls factor not possible except under standard cost system.
2. Labor—brings out forcibly any labor loss due to fabricating under different standards of practice than were originally set up as standards. Establishing labor standards throughout plant makes it impossible to pad the payroll.

3. Expense—95% of foremen or keymen bonus plans in effect today amount to nothing more than Christmas presents because unless the factors developed through standard costs are used there is no basis for computing savings on which any bonus plan should operate.
4. It is impossible for a general manager in a large organization to be conversant with all details. A standard cost system makes it possible for him in five to ten minutes to visualize and tell just what departments are falling down.

Based on practical experience with process costs, job costs, and standard costs, I can state that the benefits derived by our company through the operation of a standard cost system are very apparent and have not only reduced operating costs but have been the means of providing the management with information that is current, giving them facts which are necessary for intelligent control.

CHAIRMAN HARRISON: While there is considerable lack of uniformity in the various systems which have been described, there is considerable uniformity as regards the results which have been obtained. It doesn't make a lot of difference what method you apply so long as you get the results.

Our next speaker is Mr. H. P. Hitchcock, of J. C. Haartz Company, New Haven, Conn.

## EXPERIENCE OF THE J. C. HAARTZ COMPANY WITH STANDARD COSTS

H. P. HITCHCOCK

J. C. Haartz Company, New Haven, Conn.

**T**HREE years ago on May 1, 1925, the J. C. Haartz Company instituted a cost system based on the use of standards for labor, material, production, etc.

This concern rubberizes fabrics, taking the cloth dyed or undyed and placing thereon a rubber compound converting the same for use as automobile top material, raincoat material, hospital sheetings, etc.

This industry is one of those in which material cost of the

finished product is considerably greater than the labor cost. For instance, if we pick out any one product and find the total cost to be 35 cents (.35), the principal cost elements are as follows: material consisting of fabric and rubberizing compound, 28 cents (.28); labor  $2\frac{1}{4}$  cents (.0225), and burden  $4\frac{3}{4}$  cents (.0475). Any of our products, if analyzed likewise, will show approximate results.

I am bringing out this fact inasmuch as I believe that with a good many of you, the labor is the principal element of cost.

Bearing in mind that material costs are predominant, you will see that we must give especial attention to methods of purchasing of fabrics, and rubberizing materials and the application of these rubberizing materials on the fabrics.

It is a fairly difficult proposition even to an experienced operator to apply the specified weight of coating to a given fabric. This is especially true of small and medium-sized runs. On long runs, of course, the operator benefits by his experience on the first few rolls run through the operation. The Rubber Association of America recognizes this fact and in their recommended rules for inspection covering automobile fabrics, they say, "The allowable variation in weight per linear yard on 54-inch goods shall be 1 oz. under or 2 oz. over the weight specified; for other widths the allowable variations shall be in proportion."

It is then essential that we watch and endeavor to control this over- or underapplication. Inasmuch as any material which has received an underapplication of compound will in all probability be rejected by the automobile manufacturer, the tendency for the operator is to overapply in order to be safe rather than run too close and perhaps result in underapplication. This tendency with the resultant overapplication is an element of cost which I believe is overlooked by most manufacturers in this industry. They all unquestionably are aware of it and perhaps would be startled if the cost of this overapplication over a period of six months or a year were revealed to them.

Through the use of our standard costs we have been able to present these figures showing the cost of overapplication, and our experience shows that the tendency is toward overapplication. Should, however, an underapplication figure appear, it would be equally important and correctional steps would be taken.

The fact that the operator is being checked on his operating efficiency has given us very beneficial results.

Another factor in this industry which is of vital interest is the production of seconds. This is, of course, the yardage which is produced, but through some defect in the fabric, in the compound, or in the final finish it is made unsalable as first-class material. These yardages must be disposed of and they are sold at a reduced price and below the cost of production. Inasmuch as it costs as much to produce a yard of seconds as it does a yard of firsts the difference in cost and sales value of the seconds material must be recognized in the cost of the first-class material yield.

Standards have been established for the normal amount of seconds expected to be produced for the various classes of products. These, of course, are based on experience and are known to us as "seconds factors." In making any cost estimate the seconds factor applicable to that particular product under consideration is recognized.

In our accounting, the difference between cost and sales value of seconds is carried into the cost accounts of the respective classes of firsts. The sales value of seconds is a standard price which is carried to a seconds department account.

The sale of seconds is considered as a separate function, and, through the comparison of the standard with the actual sales value, the management receives a picture of how the seconds sales department is functioning. Any variations of actual sales value over or under the standard sales value is carried to profit and loss.

All rubberizing materials are priced at standard as well as actual. In addition to the facilitation of our accounting, summaries are made of the variations between actual and standard prices of materials. Any fluctuations and trends are readily detected. This is of value, other than for cost purposes, to the management in indicating how the purchasing department is functioning. It is of value to both the management and the purchasing department in indicating the trend of prices of the various commodities and pointing out those which may require especial attention. The purchasing department by being automatically forewarned, so to speak, if the trend is upward, attempts to discover the underlying reasons, make advantageous contracts, seek different sources of supply, etc., and in case of downward trend, be wary of amounts carried in stock and of placing of future purchases.

The use of the trend of prices which have our standards as the base has been of material benefit to the purchasing department.

The fabric price variance is considered apart from our rubberizing materials variance. A good portion of the auto-top material is bought on a contract basis. At the time the cost estimate is made the prevailing market price of the fabric is recognized. This becomes the standard value of the fabric for any material produced under this contract. The purchasing department, however, when it enters into the market may be able to purchase the fabric at a higher or lower price, or in a case of shortage, another fabric of a different value may have to be substituted.

A comparison is made between the actual value of the cloth used and the standard established. The variance over or under indicates how the purchasing department has functioned or it has indicated the loss or gain in substitution of fabrics.

In our compound mixing, a comparison of actual and standard values is made which can be interpreted to two main causes: first, increase in cost of materials; second, inclusion of more than the standard specified amount of ingredients, inaccuracies of weighing, etc.

From what has been said, and considering that materials are the dominant cost factor, you will see that we have a very close control of all materials concerned in our product, and, naturally, this control means reduction in costs through elimination, to a great extent wastage, misuse of materials, reduction in seconds produced, proper purchasing, etc. As an indication of this control, our first annual inventory after institution of standard costs checked the physical inventory within six-tenths of 1% (0.6%) of the book inventory. the book inventory being the lower.

Now let us give some consideration to labor and burden. We shall first consider burden. We operate on a standard burden rate per yard, there being various rates naturally for various classes of product. This standard burden is accumulated departmentally and compared with the actual burden. Variance over or under is our barometer for indicating relation to normal production. The standard burden is carried through our accounting and the variance over and under is carried to an over- or underabsorbed burden account. It is carried here until the end of our annual or semi-annual accounting period when it is written to profit and loss.

By carrying our standard burden through our cost accounts and by using the same in our cost estimates our prices are not subject to those violent fluctuations resulting from abnormal pro-

duction periods. In times of low production we are able to furnish cost estimates which will or should be in line with our competitors who may at that time have a high production. And likewise in times of high production we will not be submitting an abnormally low price.

From the time of the institution of our system up to January 1926 our production had been above the monthly figure we had established as standard production. In January 1926, however, our actual production closely approximated our standard production figure. In this particular month our actual burden was at variance with our standard burden by less than \$200. This indicated that our standard burden rates for that standard production were very close to the correct. As a further proof we found that the budget established for the preceding eight months varied from our actual expenditures by eight-tenths of 1% (0.8%).

This over- or underabsorbed burden is a very good gauge of sales department activities aside from any tabulation of sales figures. Any underabsorbed burden indicates that insufficient volume is being furnished the factory.

Although labor may be a small part of our costs, it certainly does not suffer from any lack of attention. Previous to our use of standard costs our foremen had no idea as to the operating costs of their respective departments. The time of each employee is charged to the department to which he is regularly assigned. We use what is known as a "transfer card" which is to cover the transfer of an employee's time while temporarily working in some department other than that to which he is regularly assigned. This transfer card is also used to transfer the employee's time when performing duties which may be out of the line of regular production. For instance, in case of a sprinkler leakage which would require the use of employees in drying material which would be chargeable to the insurance company rather than to production. Previously we had difficulty in having foremen faithfully follow instructions about furnishing transfer cards for transfers to other departments or for transfers for special duties.

The nature of these cards was apparently vague to them—"had something to do with costs," but there apparently was no way in impressing them with the results if these cards were not furnished.

When we adopted standard labor rates and presented weekly the ratios of actual and standard before the departmental foremen,

they soon saw the necessity of furnishing these transfer cards. In fact some of them became overzealous and furnished transfer cards for trivialties. This indicated, however, that they were alert and, of course, disposition of such cards was left to the judgment of the superintendent or the cost department.

The presentation of these weekly ratios to the department foremen has been of immense benefit aside from any possible reduction in labor costs in having the foremen take a very keen interest in the proper functioning of their respective departments. It has made this information available to those men who are directly in touch with the operations and who can go a good way in making correctional steps. The information is timely so that such correctional steps may be taken early rather than after the figures have become history and merely a matter of records. Any upward trend or any violent fluctuation must be accounted for by the foremen. This puts him continually on the alert to detect any conditions which may affect the costs in his department.

In the first three months after the adoption of the standard labor rates we showed large reductions in our labor ratios indicating the effect it had on the foremen and also pointing out to us the fallacy of some of our former rates.

We shall take one instance—the labor ratio for one particular department appeared for May, 1925, at 120. Inasmuch as we had set our old rate as the standard it indicated that this old rate was 20 points out of the way. Now let us look at the same month a year later and we see that the ratio for May 1926 for this same department was 74. In comparing the production for the same months, we find in May 1925—425,611 production units, and in May 1926—435,840 production units. The increase in units is 10,229 or 2.4%. As far as production is concerned we may consider these months identical. Then what is the cause of the reduction in labor ratio? There is apparently only one answer and that is the increased efficiency of the department.

Naturally there is a point to be reached beyond which there can be no further reductions in labor ratios. After three years of operation of this standard cost accounting we find our labor rates pretty much stabilized.

Leaving the feature of managerial control possible through the use of standards, let us consider for a moment the mechanics of accumulating the cost data and the accounting for cost purposes.

In the first place, I must marvel at the flexibility of the system in being able to adopt it to the changing conditions of business and of manufacturing which are bound to arise. Most any phase in which the management may wish to view the business can be presented through the medium of the cost system.

We can present our profit and loss by classes of product, on any particular order any individual customer, any salesman's territory, products sold on any particular price list, in fact almost any classification desired. And it is done through the simplest of clerical details.

Standard Costs have stood the test of over three years' operation by us and it would be like cutting off our right hand to abandon this method and revert to our former methods.

CHAIRMAN HARRISON: Mr. W. F. Worrall of the International Silver Company, is rather well known to you. Mr. Worrall took a very active part in one of our previous conventions. Mr. Worrall has promised to make his report snappy, so we will ask him to address you.

### A BRIEF SUMMARY OF THE RESULTS OBTAINED THROUGH THE USE OF STANDARD COSTS BY THE INTERNATIONAL SILVER COMPANY

WILLIAM F. WORRALL

International Silver Company, Meriden, Conn.

AT our conference of two years ago, I attempted to explain to you how our standard costs were developed and now I wish to add to that by stating briefly what benefits have been derived from their use.

The object of our business activity is to make a profit and the Accounting is a statement of these business dealings which should be subject to review and analysis. It is possible to make a review of any set of accounts but to make an analysis is quite another problem. This is the position we were in before we adopted the use of standard costs.

We had a well-planned system of detail costs and at the close of each inventory period we were able to present statements of our operations for review only. To illustrate, in our detail cost we

accumulated the various elements of cost in the usual manner. These costs were made up, in a great many instances, in advance of the actual manufacture of the article, a margin of profit added, and the selling price set. Goods were sold at these prices and it is natural to assume that a profit should have been realized. At the close of the year, an inventory was taken and a manufacturing statement rendered based upon the accounts on the General Books. In many cases the results shown were far from those anticipated.

It was natural to question why there should be any difference between these two records. This brought about a demand for some means of accounting which would permit an analysis of our accounts into the causes for the variation in the profits.

The first step in accomplishing this was to devise some plan for ascertaining, monthly, the cost of goods sold, thus giving us the basis for a statement of earnings every 30 days instead of at the close of the fiscal year. It was also desired to have this statement for each class of product manufactured.

In order to do this, it was necessary to establish, first a unit of measurement and then a simple means of applying this to our monthly sales. This was accomplished by setting up standard costs for all articles in our lines and measuring the actual cost of operation with them.

We are now in the sixth year in the operation of this plan and have had the following statements of our financial operations each month during this period,

Balance Sheet

Statement of Earnings by Class of Product

Statement of Earnings by Factories

Statement of Inventories by Factories divided into the main division of our accounts.

If this were all that we had accomplished, through the use of Standard Cost, we would have been quite satisfied. These statements give us an excellent review of the transaction for a period but there was still a big "Why" in our minds and a desire to know why the results of one period should vary from another. Through the far-sightedness of the one who designed and supervised our plans, the standards were set in sufficient detail so that we were able to ascertain the differences between the actual and standard

cost for every transaction from which the above statements were made.

The basic data for our standard cost remain fixed and unchangeable for all time. Having the standard cost of sales as well as the actual, it is a very simple matter to make a comparison of one period with another by a comparison of the variations from standard for the two periods.

The estimated costs which are used for setting selling prices form the basis for our standard cost and through a very few calculations we are able to convert the standard cost of sales to the same basis upon which our estimates were set and thus enable us to know in what department of our business we have not lived up to the standards. Through such an analysis we divide our variations into the following main classes:

Price received for our product.

Material as to price and use.

Manufacturing Expenses.

Administrative Expenses.

Selling Expenses.

In many instances if there is a falling off in profits, it is usually blamed upon the manufacturing departments. With a means of analyzing the results into such divisions as above, we are able to place our finger upon the source of trouble and take steps to correct it if possible. The manufacturing departments may be bending every effort to reduce their costs and these efforts may be lost if the sales department do not make a similar effort and are forced to reduce their prices.

We have just as many complications as the average business where a great many small articles are made and without any means of measuring our activities we would not be able to get the results as outlined above. The Standard Cost is our unit of measurement, which when used intelligently reduces our problems to those of a company who are manufacturing but one article and can measure their activity to the quantity of that article produced.

It is through the use of the standard cost in the manufacturing departments of our business that we have received the greatest benefits and made the greatest savings. To say that the system itself has saved so many dollars, is not unlike the community that built a beautiful church and expected that all people within the parish

would immediately become saintly. No system of accounting, no matter how well it is designed, will be of any use unless it is placed in understanding hands.

We have several plants in which are produced similar articles under like conditions. Standards were set for each operation in each plant based upon time studies and these compared to ascertain which plant employed the best method and had the most efficient equipment. Monthly through the medium of our payroll distribution, which also serves as a basis for our accounting, a statement is prepared showing the actual and standard time for each operation and a comparative statement made showing the efficiency of each operation based upon the standard for the plant and the standard for the best method and equipment in the group. Within each plant it is also possible to subdivide the statements so as to show the results of the individual operators and in times of decreased production be able to reduce the force by dropping the inefficient workers first. These statements when intelligently used by the superintendents have produced a spirit of competition which has improved our methods, the efficiency of the workmen, and in turn has reduced our manufacturing costs.

In a similar manner we are able to prepare statements of all manufacturing expenses shown in relation to the standard hours produced. The standard hour being the basis for the detail standard cost of each article, it is the basis element for our unit of measurement.

I wish also to add endorsement to what Mr. Sweetser said this morning, that our standard costs are not in themselves actual costs. They are simply a unit of measurement and a means of obtaining the actual costs. They do not enter into the final results of our business. They are simply a yardstick and we are using it for measuring our various activities in detail. They form the basis for all of our statistical reports right through from the first time ticket issued up to the balance sheet, but they themselves are not actual costs.

CHAIRMAN HARRISON: Just a brief summary—I think you will agree with me that our speakers this afternoon have made an excellent showing as to the results obtained from standard costs. You will remember that Mr. Knapp of Waitt & Bond stated that the standard cost system only cost half as much as the former job-

order system. Mr. Lohnes, of the National Cash Register Company told us how they saved \$100,000 a year in the clerical cost of operating their cost department through the introduction of standard costs. Mr. Boston said they reduced their cost department cost 40%. Mr. Brown of the French Battery Company said that his concern cut the cost of its cost department operations in half by introducing standard costs.

The success of standard cost plan is largely due to the fact that it is based on a sound psychological principle. The natural inclination of any worthwhile man is to try to make a good showing. Standard costs makes it possible to set a proper objective for the individual and to show him then to what extent he has fallen short of his objective, thereby placing a tremendous instrument of efficiency in the hands of modern management.

There is one thing some of you may have noticed in these talks this afternoon, which is that very little has been said about savings which have resulted from the use of standard costs and budgets in the selling end of the business. I rather venture to prophesy that five years from now at our conventions, we will be talking a great deal more about savings in the selling end of the business than we will about savings in the manufacturing end, with which most of our speakers dealt today.

The most important result from the operation of a properly lined up, coördinated budget and standard cost plan is that it results in a virtual change in the viewpoint of an entire business organization. Such a plan practically forces every member of an organization to look ahead and to practice foresight, to figure what is the best procedure to be followed in order to enable the company to earn the maximum of profits of which it is capable.

I have found in my work that we get the benefits of a budget in the early stages even before we have a budget plan operating. I remember introducing a budget plan in a large agricultural implement company, and as a preliminary step I called upon all the branch managers to turn in forecasts of what their sales would be in the coming year and what it was going to cost them to sell these goods. As usual, these men knew absolutely nothing about the effect of fixed charges on profits. One manager whose salesmen averaged \$60,000 a year nearly had heart failure when we showed him statements which proved conclusively that he could make a handsome additional profit by putting additional salesmen to work

in new territories and in territories which were only partly worked who would only average \$40,000 a year sales.

The result of our conference with these managers was that in practically every case, the branch managers revised their budgets on the basis of the information we gave them showing the effect of fixed charges on profits. The net result was that the revised budgets showed sales of 20% over the original figure, and a considerable increase in profit. Every branch manager stated that he was satisfied that he could live up to the revised budget as well as he could have lived up to the original budget.

It is along this line that we accountants are going to be of the most tremendous value in the business struggles of the future. It is going to be up to us to point out to the manufacturer where the point comes of diminishing profit, to show him to what extent sales expense can safely be increased to secure an extra dollar of sales, and it is by enabling the manufacturer to plot out the program which will give him that combination of sales and expense which will give him the maximum profit, that the future of accounting lies, as I see it. I feel that while much has been accomplished by standard costs and budgets nevertheless we have only scratched the surface of the subject. I will now turn the meeting back to Mr. Stevenson.

PRESIDENT STEVENSON: Gentlemen, I think this has been a very interesting and instructive session. I do not believe any one could have listened to the experiences of these men who have actually been carrying out the work in their factories without carrying away a sincere conviction that modern standard cost methods open up tremendous fields of possibility in economic plant operation. I would like to say a few words more on that subject, but time is very short.

We are now about to close our ninth annual convention. I think it is fair to say that it has been a good convention. I think the character of the technical sessions, which after all, is the important thing that determines whether our convention has been a success or not, has been of a particularly high order and has measured up to the high standards which have been set by the conventions which we have held in previous years.

I want to tell you as a member of the National Board, that it is becoming increasingly more difficult to measure up to the

standards which previous Boards have set. So far, our Boards have been able to do it. I think confidently that our new Board will be able to crash through this year and give us a convention next year which will be even better than this one.

Outside of the technical sessions, I think that everything has been very splendidly organized. The work of the New York Chapter deserves the highest commendation. The spirit in which they have handled the thing and the hospitality they have extended—particularly to the ladies—is beyond any words of mine to adequately cover.

I believe that we should close this convention with two motions. The first should be a motion of thanks and appreciation to the men who have organized these sessions and to the speakers who have addressed us. These men have given freely of their time and effort, and it is through them that our meeting has been the success which it has. I will therefore consider that a motion has been made and seconded, extending the thanks of this convention to the men who have participated in and handled the technical sessions.

I will ask those of you who are in favor of that motion to say "aye." Contrary minded, "no." It is unanimous.

We will now close our convention by a rising vote of thanks to the New York Chapter.

The members arose and applauded.

**PRESIDENT STEVENSON:** Gentlemen, the meeting is now adjourned.



# THE PROFIT TREND IN INDUSTRY

By

HARRY A. BULLIS

Comptroller of General Mills, Inc.  
Minneapolis, Minn.

HARRY A. BULLIS is a graduate of the University of Wisconsin. He was formerly Comptroller of Washburn Crosby Company, Minneapolis, and is now Secretary and Comptroller of General Mills, Inc.,—a consolidation of Washburn Crosby and four other flour milling companies. He is a director of the National Association of Cost Accountants and has been in charge of research for the past three years. He is also a member of the American Economic Association, the American Statistical Association, and is on the Committee on Cost Accounting of the Millers' National Federation.

## PREFACE

In order to secure material to serve as the basis of discussion at the opening session of the 1928 National Association of Cost Accountants convention on the subject "The Profit Trend in American Industry," the board of directors of the National Association of Cost Accountants requested its Research Department, through the writer, to make an investigation of the actual profit trend in various industries. This is a report of the results of that investigation.

The author has been assisted by Mr. Marcus P. Stark, Miss Lucile Brown, and Mr. Ralph D. Stiles of Washburn Crosby Company, who tabulated the data and aided in the writing of the manuscript.

Acknowledgment is made, with pleasure, of the very effective coöperation rendered by Dr. S. C. McLeod, Secretary and Business Manager of the National Association of Cost Accountants, by Miss Elsie Hawkinson of Washburn Crosby Company and by Mrs. H. A. Bullis, who performed much of the routine work connected with such an investigation.

HARRY A. BULLIS



## CHAPTER 1

### INTRODUCTION

IN recent years the trend of profits has been the subject of frequent comment and discussion in the papers and magazines. Many statements have been made regarding the general inadequacy of profits. With a view to getting at the facts of the situation, the data presented in this report were secured from questionnaires, financial and business services, statistics of income from returns of net income of the Treasury Department, letters to trade associations and executives, and other sources.

The National Association of Cost Accountants mailed questionnaires to 7,500 American manufacturers requesting, for the five years from 1923 to 1927 inclusive, their (1) net sales in dollars, and (2) net income before interest charges, federal taxes, and dividends. A request was also made for opinions as to the causes and possible remedies for unsatisfactory conditions in the manufacturer's particular industry. From the total of 7,500 questionnaires, 298 complete replies are used in this report. The relatively small percentage of complete replies indicates that many business men do not care to disclose their earnings.

The net income of 350 corporations, for the five years from 1923 to 1927 inclusive, was obtained from *Moody's Service* and from the *Commercial and Financial Chronicle*. The income figures used for each company are comparable for the five-year period.

The "Statistics of Income from Returns of Net Income" of the Treasury Department, United States Internal Revenue, were retabulated and analyzed by industries and by industrial groups classified according to size of net income to and including 1925. The 1926 figures were not available at the time of writing this report.

Approximately 450 letters were mailed to representative trade associations, business executives, economists, and financiers requesting their coöperation and asking for statements as to the profit trend and contributory causes.

The "Standard Trade and Securities Service" was used for information relative to earnings by industries during the first part of 1928.

The results of several other profit trend investigations were secured.

As previously stated, the object of this report is to present the facts as to what the profit trend in different industries has been during the past five years and to furnish a foundation for the consideration of the causes of the conditions disclosed and of the possible remedies.

## CHAPTER II

### SUMMARY OF RESULTS OF INVESTIGATION: PROFITS OF INDUSTRY AS A WHOLE ARE NOT DECLINING

THE results of all the investigations made of the profit trend in American industry during the last five years may be summarized in the following statement: Although profits have declined for all companies in certain industries, and for some companies, especially the smaller units, in many industries, profits in industry as a whole have not declined but have been on somewhat of an upward trend.

Confirmation of this conclusion is furnished by several investigations summarized in the following pages:

#### 1. Data from N.A.C.A. Questionnaire and from Moody's and the Commercial and Financial Chronicle

The results from these two sources are combined, for the two sources are more or less mutually exclusive as regards companies covered, though the results show a great deal of correlation. Of the 298 firms whose data were used in the N.A.C.A. questionnaire, only 43 were so-called "large" firms, *i.e.*, firms reporting net income in one or more years of more than \$1,000,000; while 255 were so-called "small" firms, *i.e.*, firms reporting net income of less than \$1,000,000 in each year. In the tabulation made from the data in *Moody's* and the *Commercial and Financial Chronicle*, the proportion between "large" and "small" firms was reversed, as 275 of the 350 firms were "large" (on the basis of the above classification), and 75 were "small."

The results from these two sources are given in tabular form on the following page, the first table showing the percentage increase or decrease for each year, using 1923 as 100%, and the second table showing the actual money amounts reported for net income.

The trend of profits is upwards for all companies in both investigations, but the upward trend in 1926 and 1927 (especially in 1926) is much more pronounced in the case of *Moody's* data

**PERCENTAGES OF NET INCOME ON BASIS OF 100% FOR 1923  
FOR FIVE YEARS 1923-1927**

As Reported (1) in N.A.C.A. Questionnaires  
and (2) in *Moody's* and *Commercial and Financial Chronicle*

Years	Total Firms Reporting		Firms Reporting Net Income in One or More Years of More Than \$1,000,000		Firms Reporting Net Income Each Year of Less Than \$1,000,000	
	N.A.C.A. 298 firms	Moody's & C. & F. C. 350 firms	N.A.C.A. 43 firms	Moody's & C. & F. C. 275 firms	N.A.C.A. 255 firms	Moody's & C. & F. C. 75 firms
1927	118	141	123	142	96	73
1926	118	146	124	147	90	104
1925	127	128	134	128	85	100
1924	95	98	99	99	77	66
1923	100	100	100	100	100	100

**NET INCOME IN THOUSANDS OF DOLLARS FOR FIVE YEARS 1923-1927**

As Reported (1) in N.A.C.A. Questionnaires  
and (2) in *Moody's* and *Commercial and Financial Chronicle*

Years	Total Firms Reporting		Firms Reporting Net Income in One or More Years of More Than \$1,000,000		Firms Reporting Net Income Each Year of Less Than \$1,000,000	
	N.A.C.A.	Moody's & C. & F. C.	N.A.C.A.	Moody's & C. & F. C.	N.A.C.A.	Moody's & C. & F. C.
1927	\$224,750	\$1,987,452	\$192,380	\$1,970,650	\$32,370	\$16,802
1926	223,768	2,065,663	193,303	2,041,686	30,465	23,977
1925	240,658	1,807,861	208,557	1,784,746	32,101	23,115
1924	179,890	1,386,572	153,733	1,371,387	26,157	15,185
1923	189,749	1,411,971	155,867	1,388,842	33,882	23,129

(See also Tables, Series I and II)

**PERCENTAGE OF NET INCOME TO SALES AS SHOWN BY N.A.C.A.  
QUESTIONNAIRE AND UNITED STATES INCOME TAX RETURNS**

Years	N.A.C.A. Questionnaires			Income Tax Returns Percentage of Net Profits to Total Receipts
	298 Firms Reporting	43 Firms Reporting Net Income in One or More Years of More Than \$1,000,000	255 Firms Reporting Net Income Each Year of Less Than \$1,000,000	
1927	9.2%	9.7%	6.9%	....
1926	8.7	9.2	6.4	....
1925	9.7	10.4	6.9	5.96%
1924	8.5	9.1	6.2	4.94
1923	9.1	9.4	7.8	5.63

than in the results from the N.A.C.A. questionnaire. When the figures are broken down into the results from "large" and "small" firms, it will be seen that a reason for part of the difference between the two investigations is the larger proportion of "small" firms in the N.A.C.A. data, and the larger proportion of "large" firms in the data from *Moody's* and the *Commercial and Financial Chronicle*. The upward trend has been confined almost exclusively to the "large" firms, which have shown a rising trend in the data taken from both sources, while the "small" firms have shown a downward trend.

Not only are the increased profits earned by the "large" firms as compared with the "small" firms shown by the data on Net Income on the N.A.C.A. questionnaires, but they are also shown by the data on the Percentage of Net Income to Sales. Data on this point were not available from *Moody's*, but were available from the Income Tax returns for the years 1923-1925 inclusive. The results shown by the above two sources on this point are given in the last table on page 346.

## 2. Income Tax Data

A study of income tax data on corporations as reported by the Internal Revenue Department also supports the conclusion that the trend in profits has been upwards since 1921.

It is necessary, in using income tax data, to keep in mind certain qualifications which are summarized in Foster and Catchings' book on "Profits" as follows:

In considering these figures and all others that are used as a basis for taxation, we must make allowance for the fact that they are drawn up under the strong temptation to make income appear as small as possible and for the further fact that, as a matter of business policy, many corporations are not expected to show profit, but are conducted for the profit of other corporations. Aggregate figures for thousands of corporations, some very large and some very small, are useless unless for certain purposes, and misleading for others.

Allowing, however, for these various qualifications in the use of income tax data, the following table showing net earnings in excess of deficit for the ten-year period from 1916 to 1925 shows a very satisfactory condition for the last four years of the period. The period 1923 to 1925 shows average earnings of over \$6,400,000,000, while the period 1918 to 1920, when war and post-war profits were

# COMPARISON OF CORPORATION INCOME TAX RETURNS IN THE UNITED STATES

Year	Total Number of Corporations Filing Returns	Net Earnings in Excess of Deficit
1925	430,072	\$ 7,621,055,602
1924	417,421	5,362,726,299
1923	398,933	6,307,974,147
1922	382,883	4,770,034,787
1921	356,397	457,828,679
1920	345,595	5,873,231,069
1919	320,198	8,415,872,217
1918	317,579	7,671,738,888
1917	351,426	10,100,752,649
1916	341,253	8,109,004,573

(For greater detail, see Table IV-A.)

## PERCENTAGES OF NET INCOME ON BASIS OF 100% FOR 1923 FOR FOUR YEARS 1922-1925

(Income Tax Statistics)

Years	NUMBER OF RETURNS			PROFITS IN DOLLARS		
	Total Number Reporting Profits	Number Reporting Profits of \$1,000,000 or More	Number Reporting Profits of Less Than \$1,000,000	Total Profits	Total Reporting Profits of \$1,000,000 or More	Total Reporting Profits of Less Than \$1,000,000
1925	108%	108%	108%	115%	125%	107%
1924	101	88	101	91	92	91
1923	100	100	100	100	100	100
1922	91	82	91	84	78	89

## NET INCOME (ACTUAL FIGURES) FOR FOUR YEARS 1922-1925

(Income Tax Statistics)

Years	NUMBER OF RETURNS			PROFITS (Thousands of Dollars)		
	Total Number Reporting Profits	Number Reporting Profits of \$1,000,000 or More	Number Reporting Profits of Less Than \$1,000,000	Total Profits	Total Reporting Profits of \$1,000,000 or More	Total Reporting Profits of Less Than \$1,000,000
1925	252,334	1,113	251,231	\$9,583,684	\$4,973,854	\$4,609,830
1924	236,398	901	235,488	7,586,652	3,658,047	3,928,605
1923	233,339	1,026	232,313	8,321,529	3,990,671	4,330,858
1922	212,535	845	211,690	6,963,811	3,127,666	3,836,145

(See also Tables IV-B and C.)

being garnered, shows average earnings of only about \$900,000,000 more. Considering that all these excess earnings of 1918 to 1920 were lost in the year of 1921, and that no such decline has occurred in the years following 1923-1925, it is altogether probable that when the final figures for 1926 and 1927 are compiled by the Internal Revenue Department, the five-year period of 1923-1927 will show greater average profits than the preceding five years of 1918-1923. The profits in 1916 and 1917 are abnormally high, and cannot be taken as a base in determining the trend of profits.

The income tax statistics, covering all corporations, support the same conclusion that the upward trend has been much more pronounced in the case of "large" firms than in the case of "small" firms. Profits were not so good in 1924 as in 1923 for either "large" or "small" corporations, but the decline was slightly greater for "small" than for "large" corporations, while the increase in 1925 over 1924 was greater in the case of the "large" corporations than in the case of the "small" corporations.

### 3. National City Bank Study

The National City Bank Study, printed in the April, 1928, bulletin, carries the figures on profits on from the point where the income tax data stop. (See Table III-A.) This study shows that, for 709 corporations, the year 1926 was considerably more satisfactory, from a profit standpoint, than was 1925, while 1927 was about on a par with 1925. Excluding General Motors, which has shown such a marked increase in profits, the results were not quite so favorable, but at that they show a substantial excess for 1926 over 1925, and that 1927 fell only slightly below 1925. The summary accompanying this table in the National City Bulletin calls attention to the fact that if the heavy losses of oil companies, due to conditions peculiar to that industry, are excluded, the total earnings of the companies in other lines were equal in 1927 to those in 1926 and exceeded those of 1925 by 8.5%.

Commenting on the results for 1927 as compared with previous years, the National City Bulletin says:

As usual during the past year a great deal has been said about the unsatisfactory character of business profits. The year has been frequently referred to as one of "profitless prosperity" as though we had been simply going through the motions of doing business without making any money. As usual, the actual figures, while they show a decline, have fallen

a long way short of justifying all the hard-times talk that has been circulating.

In the May, 1928, bulletin of the National City Bank, rather an optimistic survey is made of the results shown by the earnings statements published for the first quarter of the current year. This survey states as follows:

Corporation earnings statements now being made public for the first quarter show a good deal of variation, in keeping with the mixed character of business, but on the whole are encouraging considering the unpromising way in which the quarter began. Outstanding of the reports was that of the General Motors Corporation, showing net earnings available for dividends amounting to \$69,468,576, the largest excepting only the second quarter of 1927 in the history of the corporation, and an increase of 32% as compared with \$52,551,408 earned in the first quarter of last year. The United States Steel Corporation earned \$21,331,871 after all charges during the first quarter as against \$13,794,833 in the final quarter of last year, \$26,327,362 in the first quarter of 1927, and \$26,074,957 in the corresponding quarter of 1926. Thus Steel did not do quite so well as Motors, notwithstanding that steel output for the quarter was slightly larger than last year. The trouble, of course, lay in prices, most of the shipments during the quarter being made on orders taken before the recent advances in prices became effective.

Excluding General Motors and United States Steel, a tabulation of earnings of 113 industrial companies thus far reported reveals 73 increases and 40 decreases as compared with the first quarter of last year, with the total showing an increase of 14.7%. While final conclusions as to the quarter's showing are unwarranted until more reports are available, the results thus far have been better than seemed probable. Prospects, moreover, point to a still better showing for the second quarter. One of the chief factors which has held down profits in the past three quarters has been the losses sustained in the oil group, and these companies henceforward will have last year's poor figures to compare with, besides having the advantage of the recent improvement in the gasoline situation. Steel companies likewise promise to do better in the second quarter, while earnings of most automobile companies should show up favorably, the chief element of uncertainty in this industry being the effect of Ford competition, which probably will not be fully felt until the third quarter.

#### 4. Survey by Federal Reserve Bank of Cleveland

The Federal Reserve Bank of Cleveland has made a survey of the net earnings of 171 industrial corporations for the period 1919 to 1927 (Table III-B), on which the Governor of the Bank, E. R. Fancher, comments as follows:

An inspection of the data shows that for the past six years the trend of profits has been steadily upward, except for a slight drop in 1924 and again in 1927. The first few years reflect the improved condition of business following the post-war slump. In 1924 earnings fell slightly as the tide of business receded (a natural phenomenon after the activity of the immediately preceding year), and the past three years show a healthy growth in total net—1926, our banner industrial year, naturally showing the greatest improvement. A slight falling-off in 1927 is not entirely unexpected after two years of rather intense activity. A comparison of the returns for 1927 with those of the immediately preceding year shows that, while the total net for the 171 concerns is not materially lower, rather wide changes may be found in the figures of certain industries. The oils, for example, show a loss of approximately 67%. Shoes and leather, on the other hand, show nearly 90% increase, and rubbers an increase of nearly 200%. In most of these industries these changes are of course due to unusual and peculiar conditions. Mining stocks have felt the effects of the coal strike. Oil companies are still combatting the over-production evil.

We have not made a study of earnings as related to capitalization, and it may be that, because of stock distributions which have been made rather generously in recent years and the sale of new stock, the earnings per share might tell a somewhat different story. . . .

The principal reasons for the increasing trend of profits are, it seems to me, the improvement in agricultural conditions, domestic price stability, an easy money situation, and, to an undetermined extent, quantity production, which has been stimulated by the installment plan of selling goods. The progress made in European stabilization has unquestionably also been a contributing factor.

## 5. Survey by the Federal Reserve Bank of New York

The Federal Reserve Bank of New York has made a calculation of the rate of earnings on gross capital of 35 corporations, concerning which survey Carl Snyder of the bank writes as follows:

This compilation excluded U. S. Steel, General Motors, and American Telephone, as so large as unduly to affect the result. These 35 were corporations that we could carry through from 1911, and the result of this inquiry was to indicate that the rate of earnings for 1923 and 1924 was at the same average rate as 1911-1913; and in 1925 and 1926, and probably also in 1927, were very much higher—by an average of over 25%.

This was from a highly representative list of corporations chosen for precisely this reason and no other, and the result seems to me effectually to dispose of the idea that earnings have not been up to standard, to say nothing of being "wiped out."

For the rest, one has merely to look at the stock market, which, after all, is a fine appraisal of actual earnings.

## 6. Study by F. A. Schick, Comptroller, Bethlehem Steel Company

In a tabulation of Industrial Group Statistics covering 1925 and 1926 (See Table VII), F. A. Schick, Comptroller of the Bethlehem Steel Company, shows that the return on the investment of 479 companies in 1925 was 8.02% as compared with 8.4% for 515 companies in 1926. In 1925 the earnings per \$100 share of common stock for the 479 companies averaged \$15.25, and \$16.34 for the 515 companies in 1926.

## 7. Study by David Friday on Profits and Prices

David Friday has made a study of the trend of profits in industry as they are related to the price level. In the summary of his study in the *Atlantic Monthly* of February, 1928, he says in part:

A study of the facts, available in our Statistics of Income annually compiled by our Treasury, leads to the conclusion that the decline in the general level of prices which has occurred since the spring of 1923 has not had the disastrous effects upon the profits of corporations which one would have expected.

The decline in the prices of industrial products would naturally affect the profits of mining and manufacturing corporations most directly.

In 1920 the price level stood at an average of 241 for the year, and the total profits of all mining and manufacturing corporations, before paying taxes and before deducting depreciation, were \$5,537,000.

By 1925 the price level had declined to 165, but the profits amounted to \$6,013,000,000.

It is clear that the level of prices was not the primary factor in the determination of relative profits in the two years.

Or take the year 1922 as the basis for comparison. The average of prices was 168 and the year began with 158 in January and closed with 175 in December. Yet in this year of rising prices industrial profits were only \$4,536,000,000. The price level was higher than in 1925 and the general trend of prices was upward, yet profits were only  $\frac{3}{4}$  what they were in the later years.

What were the other factors which entered into the situation?

There were two: a greater volume of output in the latter year, and greater efficiency, especially in the utilization of labor. On these points we have the definite statistics of the Federal Reserve Board. In 1920 the index of physical output stood at 87; in 1922 it was 85; and by 1925 it had risen to 104.

This product was created with a volume of employment represented by 103 in 1920, by 90 in 1922, and by 95 in 1925.

Payrolls stood at 124 in 1920, 89 in 1922, and 107 in 1925. The labor cost per unit of output was, therefore, much smaller in 1925 than in 1920, and was slightly less than in 1922.

With the increased volume of output, overhead costs were materially reduced per unit of product, and the profits were correspondingly increased.

The years 1926 and 1927 bear out these conclusions. The level of prices in 1926 was 161, a new low figure to that date. But output rose from 104 to 108 and labor costs declined; as a result, the industrial profits of 1926 were from 10% to 15% higher than in the previous year. The final statistics have not yet been published by the Government. In 1927 the level of prices was 152, which is markedly less than two years previous. Output declined slightly below the previous year but remained above 1925; and the wages per unit of product remained low.

The profits of the year will be approximately the same as 1925, despite the lower price level. Prices declined 5 points between the beginning and the end of 1927, but this was offset by a volume of products slightly larger than in 1925.

On the basis of these generalizations the outlook for profits in 1928 depends upon the course of prices during the year, rather than upon the general level of prices; upon the volume of physical output and upon the efficiency of labor and management.

The fulcrum of the matter is really the prospect of physical output. If the demand for commodities is sufficient to keep products at a high level, prices are almost certain to advance somewhat throughout the year. Thus far the opinion of economists, financiers, and forecasters is almost unanimous that the year will see a new high level of production. Certainly, by all the tests which have been evolved by students of the business cycle, industry is due for renewed activity in the spring of 1928.

The index of physical output should, therefore, rise above the figure of 108 which it attained in 1926. This points to higher profits for the year.

Corporate profits in lines of business other than manufacturing and mining have been less affected by the level of prices. These other profits had amounted to \$2,850,000,000 in 1920. They fell less in 1921 than did industrial profits and in 1922 were slightly higher than two years earlier. By 1923 they had reached \$3,813,000,000 and by 1925 were \$4,938,000,000. They depend much more upon the volume of output than upon the general price level. In fact, the profits of some industries, especially railroads and public utilities, are actually increased by the decline in manufacturing and mining prices. There is no reason to expect these profits to decline during 1928.

In 1922, dividends paid to persons other than corporations amounted to \$2,634,000,000, in 1925, the latest published figures available, they amounted to \$4,014,000,000. They have certainly grown materially since that year. With a further advance in profits, and with a low price level, dividends should continue to increase.

## 8. Bradstreet's Failure Statistics

Not all businesses, of course, are always profitable, and recent years have not been immune from business failures. The year 1927 was no exception to this condition, but, although failures were large in this year, the following comments from *Bradstreet's Journal* of January 28, 1928, indicate that the situation is more hopeful than might appear from a study of the failure statistics without any supporting explanation:

Failures and liabilities for 1927, the second and the fourth largest totals, respectively, in the country's history, were more truly—perhaps than in some other years—of dual origin; that is, they were partly a species of inheritance from 1926 or earlier years, while reflecting also, as far as this was possible, the results of the more immediately unfavorable occurrences of 1927. In the category of older happenings might be prominently set the great collapse in cotton prices, due to the enormous yield of 1926, the aftermath of the subsidence of the great real estate boom in Florida, and the continuance of the slow-burning liquidation of banks crippled by events of earlier years. Of 1927 happenings conducive to failure, unfavorable weather easily ranked first, because low temperatures early, with excessive rains, retarded or prevented spring trade, while the rains caused the Mississippi River and its tributaries to overflow some 7,000,000 acres of land, thus depriving wide areas of normal crop yields. Other conspicuously unfavorable happenings were the eight-months-long bituminous coal strike in the central west, the short corn crop in the eastern half of the latter area, and the slowing down of industry for which the latter half of 1927 was notable, this resulting in reduced railway earnings and the lowest level of factory employment in three and a half years. Over against these untoward moving features may be set the rally in cotton-crop values, which more than offset the reduction in the 1927 yield, and enlarged yields in the spring-wheat country, which, like the south, profited by the higher general range of agricultural prices, due in the main, it might be observed, however, to smaller than earlier expected crops in the country as a whole.

In considering the effects of inherited, as against what might be called current influences toward increased or lessened failure in 1927, it is well to note that practically the entire increase over 1926 in failures occurred in the first few months of 1927, and a very large part of the liabilities were recorded in the first quarter of that year, although increases over 1926 in both failures and liabilities were shown in the last half of the year in the central west, the result, apparently, of the soft coal strike, the short corn yield and the dullness in industry above mentioned. (See Table VI.)

## CHAPTER III

### MINING AND OIL PRODUCTION

ACCORDING to income tax returns the mining industries, including oil, have shown deficits in 1921, 1923, and 1924 (See Table IV-B). The year 1925 showed net profits over deficits amounting to \$243,000,000, which was less than half of the net profits of 1920. In 1925, 68 corporations reported net incomes of \$1,000,000 and over, compared with 37 in 1924 and 44 in 1923. There were in 1925, 5,420 corporations reporting earnings of less than \$1,000,000 each while 13,675 reported deficits. The corporations reporting deficits outnumbered those reporting profits by more than 2 to 1.

The N.A.C.A. questionnaire brought only five replies from the field of mining and oil. These five show a marked improvement in 1927 as compared with the four preceding years, but can hardly be taken as representative of general conditions in these industries. (See Table I-A, B, and C.)

### MINING

The tabulations of earnings as taken from *Moody's Manuals* (See Table II-A, B, and C) indicate relatively poorer profits in coal mining and better profits in metal mining branches of the industry as follows:

Year	Per Cent of 1923		Net Profits (000's omitted)	
	16 Coal Mining	15 Metal Mining	16 Coal Mining	15 Metal Mining
1927	19	175	\$ 6,238	\$49,850
1926	58	196	19,043	56,068
1925	15	162	4,891	46,345
1924	44	100	14,385	28,666
1923	100	100	32,786	28,552

As shown in Table II-C, the eight large coal mining corporations aggregated all the profits shown, while the eight small coal mining corporations (Table II-B), in the aggregate, show a deficit in 1927.

## Coal

It would appear that in the mining field the large corporation has an advantage which is reflected in greater profits.

A compilation made by the National City Bank and published in their April Bulletin (See Table III-A) shows for 16 companies in the coal mining industry profits slightly in excess of 1925 but 40% under 1926.

As to the reasons for the poor showing of the coal operators, David Boies, Secretary of the Anthracite Coal Operators Association, writes as follows:

I am sure I can truthfully say that the gross margin of profit of all anthracite coal companies is very much less than it was several years back, due to the following causes:

First, the sales price was not able to keep pace with increasing labor costs as the result of the numerous strikes we have had in the last six years. Second, due to the strikes and the interruption of production a considerable tonnage of annual consumption was diverted to substitutes, such as oil, coke, and soft coal. Third, our markets were further disturbed during the War due to the Federal Coal Commission regulating us out of the western markets, who turned to coke and soft coal and have never turned back, principally due to the large difference in costs of the competing fuels.

Relative to the outlook for bituminous coal, the *Standard Statistics Service* says (April 6, 1928):

Labor problems . . . remain unsolved, and the shift to open shop mining conditions continues. . . . Prices are 20% lower than a year ago. . . . Last year profits of all but a few especially favored companies were sharply under those reported in 1926, and even less satisfactory returns will be shown for the current half year. The position of the anthracite companies is likewise generally unsatisfactory.

It is probable that during the next few years improvement will be slight except as the producers may be able to reduce the cost of production through lower wage scales and labor-saving machinery.

## Metal

Profits of metal mining corporations as shown in *Moody's Manual* (See Table II-A, B, and C) in 1927, while less than 1926, were high as compared with 1923 and 1924, and slightly over 1925.

Prices of lead, zinc, and tin have declined sharply during the first quarter of 1928, but will no doubt show improvement as demand increases. Copper has shown a weakening tendency, although it is still higher in price than a year ago, and regulation of production will undoubtedly prevent serious decline. Relative to aluminum, Standard Statistics says (March 2, 1918) that "the present half year is likely to be, from the business volume standpoint, fully as satisfactory as the first six months of 1927. But it is doubtful that earnings will equal the showing of a year ago, because of lower metal prices."

## OIL

The tabulation from *Moody's Manual* (See Table II-A), covering 17 oil producing and refining companies, shows a decided decrease in profits in 1927 as compared with 1926. The 1927 figures are only 11% over 1923:

Year	Per Cent of 1923	Profits (000's omitted)
1927	111	\$150,576
1926	206	280,226
1925	189	257,663
1924	123	168,107
1923	100	135,162

Figures compiled by the National City Bank (See Table III-A) show a corresponding decrease in 1927 as compared with 1926 and 1925. Their figures cover 54 companies, and are as follows:

1927 .....	\$212,405,000
1926 .....	394,505,000
1925 .....	339,007,000

The sharp decline in profits in 1927 as compared with 1926 was undoubtedly caused by overproduction and consequent keen com-

petition. Although there is still overproduction of crude oil, yet there has been a rising tendency in the price of gasoline, which, if it continues to hold, will undoubtedly increase profits during the remainder of the year. As long as overproduction of crude oil continues, there will probably be no lasting recovery in the oil industry.

A confidential letter from the auditor of a refining company emphasizes need for a cost system. "While the wide spread between costs and sales has, fortunately, prevented actual net losses, and even shown favorable average profits on the turnover, I cannot but feel that, in the event of more keen price competition, there is danger of reversing this favorable condition."

## CHAPTER IV

### MANUFACTURING

**T**AKING the manufacturing industries collectively, the data which are available do not indicate a downward trend of profits, but rather that the tendency is upward. The replies to the N.A.C.A. questionnaire point to a smaller percentage of profit in the sales dollar of the small company than that of the large corporation. Data from the N.A.C.A. questionnaires covering 245 small concerns agree with the data from *Moody's Manuals* covering 42 small concerns that the income of small companies is generally below the 1923 level. The present trend, however, is not established; the figures from *Moody's* show a downward tendency since 1925, while figures from the N.A.C.A. questionnaires show profits of small concerns in 1927 above either 1926 or 1925.

The following tabulation summarizes the information received through the medium of the N.A.C.A. questionnaire for all manufacturing companies.

Year	PER CENT PROFIT TO SALES		PER CENT OF 1923			
	Total 286 Companies	245 Small Companies	Net Income		Sales	
			Total 286 Companies	245 Small Companies	Total 286 Companies	245 Small Companies
1927	9.2%	6.8%	115%	95%	116%	108%
1926	8.9	6.3	118	89	122	110
1925	9.9	6.9	126	94	118	106
1924	8.7	6.2	94	77	100	97
1923	9.3	7.8	100	100	100	100

Data from *Moody's Manuals* (See Table II-A, B, and C) cover 174 manufacturing concerns, of which 132 were classed as large and 42 as small, a large concern being one whose profits in any year exceeded \$1,000,000. The following table gives these data in the form of percentages, with profits for 1923 as the base:

Year	Total 174 Companies	132 Large Companies	42 Small Companies
1927	142%	143%	72%
1926	134	135	93
1925	117	117	100
1924	89	90	61
1923	100	100	100

Income tax statistics are not as yet available beyond 1925, but up to that point they tend to corroborate the data obtained from other sources. That is, 1924 showed a decline in profits as compared with 1923, while 1925 showed profits higher than 1923. Below is a summary for manufacturing corporations as reflected by the income tax statistics (See Table IV-B, C, and D.)

Year	Per Cent Net Income to Total Receipts	Percentages—1923 Profits=100%		
		Total Manufacturing	Profits Over \$1,000,000	Profits Under \$1,000,000
1925	5.85%	104%	110%	94%
1924	4.91	77	85	82
1923	6.07	100	100	100
1922	5.65	74	75	88
1921	1.23 Def.	...	34	50
1920	4.12	92	96	96

Statistics of Manufacturing Industries (Table V) prepared from the Census of Manufactures reveals a decrease of 7,625 (3.8%) establishments, from 195,555 in 1921 to 187,930 in 1925. During the same period value of products increased \$19,287,000,000 or 44%. Wages, however, increased only 31%. If the cost of materials plus wages is deducted from the total value of products, in 1925 there was a remainder equivalent to 26% of the total value of products and in 1921, 23%. This remainder is what was left for overhead costs and profits. The following table shows a comparison of 1925, 1923, and 1921 in percentages of value of products:

Year	Value of Products	Cost of Materials	Wages	Value Over Cost of Materials and Wages
1925	100%	57%	17%	26%
1923	100	57	18	25
1921	100	58	19	23

## FOOD PRODUCTS, BEVERAGES, AND TOBACCO

According to the Census of Manufactures of 1925 (See Table V), food and kindred products and tobacco represent over one-quarter of the total number of manufacturing establishments in the United States, and nearly one-fifth of the total value of products:

	Number of Establishments	Value of Products
All Manufacturing Establishments .....	187,930	\$62,714,000,000
Food Products and Tobacco .....	50,736	11,510,000,000
Percentage Food Products and Tobacco.	27%	18%

The earnings of 18 food products companies, as represented by the results of the N.A.C.A. questionnaire, are shown in the following table (See also Tables I-A, B, and C):

Years	Number of Companies	PERCENTAGES			MONEY	
		Earnings to Sales	Earnings Basis 100% for 1923	Sales Basis 100% for 1923	Earnings	Sales
1927	18	5.3	225	137	\$16,631,000	\$312,356,000
1926	18	3.6	160	147	11,830,000	335,300,000
1925	18	4.0	160	130	11,820,000	297,153,000
1924	18	3.6	123	112	9,119,000	255,476,000
1923	18	3.2	100	100	7,390,000	227,863,000

Thirteen of the above companies had a net annual income of less than \$1,000,000, and five had a net income in one or more years of more than \$1,000,000. Their percentages are shown in the following table:

Years	Earnings to Sales		Earnings Basis 100% for 1923		Sales Basis 100% for 1923	
	13 Smaller Firms	5 Larger Firms	13 Smaller Firms	5 Larger Firms	13 Smaller Firms	5 Larger Firms
1927	2.2	6.3	85	276	118	144
1926	2.6	3.8	99	182	119	158
1925	3.1	4.3	115	177	114	137
1924	2.9	3.8	95	134	103	115
1923	3.1	3.3	100	100	100	100

The net income of 17 food products and beverage companies, taken from *Moody's* and the *Commercial and Financial Chronicle*, is reflected in the following table (See also Tables II-A, B, and C) :

Years	PERCENTAGE OF 1923 INCOME			INCOME ('000's omitted)		
	17 Companies	3 Companies—Annual Income of Less Than Million	14 Companies—Annual Income of More Than Million	17 Companies	3 Companies—Annual Income of Less Than Million	14 Companies—Annual Income of More Than Million
1927	158	36	161	\$101,005	\$ 507	\$100,498
1926	155	46	158	99,325	657	98,668
1925	122	43	124	78,230	601	77,629
1924	125	85	126	79,759	1,203	78,556
1923	100	100	100	63,938	1,409	62,529

The income tax statistics reveal that profits in the food products, beverages, and tobacco industries were on the up-grade from 1922 to 1925 :

Years	Total Number of Returns		Profits Less Deficits		Percentage of Net Profits to Total Receipts
	Number	Per Cent	Money (000's omitted)	Per Cent	
ALL COMPANIES REPORTING					
1925	14,722	104	\$441,960	115	3.10
1924	14,442	102	441,137	115	3.46
1923	14,153	100	382,748	100	3.60
1922	14,087	100	297,365	78	3.18
1921	13,777	97	10,014	3	.67
1920	13,718	97	220,952	58	1.06
COMPANIES REPORTING PROFIT OF \$1,000,000 OR OVER					
1925	73	100	\$304,928	104	
1924	77	106	306,542	105	
1923	73	100	291,176	100	
1922	69	95	251,859	86	
1921	39	53	161,814	55	
1920	63	86	244,550	84	
COMPANIES REPORTING PROFIT OF LESS THAN \$1,000,000					
1925	9,230	108	\$228,544	106	
1924	9,003	105	230,310	107	
1923	8,593	100	215,748	100	
1922	8,290	95	195,812	91	
1921	7,168	83	157,362	73	
1920	7,488	87	160,297	74	

The following profit figures, published in the bulletin of the National City Bank, April, 1928, indicate increasing profits each year since 1925. (See also Table III-A.)

Years	Flour and Bakery		Food Products	
	Number of Companies	Profits (000's omitted)	Number of Companies	Profits (000's omitted)
1927	13	\$91,046	24	\$88,698
1926	13	83,734	24	87,278
1925	13	72,557	24	75,466

The Federal Reserve Bank of Cleveland has compiled a record of earnings of 15 food and packing companies since 1919. These data show that, for the particular companies covered, the aggregate profits were lower in 1927 than in 1926. With the exception of 1927, the upward trend of profits of these 15 companies has been continuous since 1921.

Year	Profits
1927	\$116,542
1926	124,886
1925	113,497
1924	105,814
1923	103,655
1922	75,305
1921	8,619
1920	71,690
1919	85,424

The revised U. S. Bureau of Labor Statistics wholesale commodity price index for food is as follows:

1927	96.5
1926	100.0
1925	100.2
1924	91.0
1923	92.7

The stock price index, averaged for December, 1927, on a basis of 100 as mean of 1917-1921 stock market cycle for food is 429.8,

and for tobacco 225.5, according to a Standard Statistical Bulletin.  
**Flour Milling**

The following figures of earnings of a representative number of flour mills, reflecting the results obtained from a questionnaire sent to all flour millers by Sydney Anderson, President of the Millers' National Federation, have been furnished by Mr. Anderson:

Date	Earnings* per Dollar of Total Invest- ment†	Earnings per Dollar of Stock- Holders' Equity‡	Earnings per Dollar of Sales
6 months ending Dec. 31, 1927....	\$.0434	\$.0878	\$.0237
12 months ending June 30, 1927....	.0737	.1167	.0328
12 months ending June 30, 1926....	.0394	.0624	.0159
12 months ending June 30, 1925....	.0646	.1056	.0286
12 months ending June 30, 1924....	.0348	.0587	.0221

\* "Earnings" represent the amount earned after deducting interest, depreciation, and Federal income taxes.

† "Total investment" means the total economic capital employed.

‡ "Stockholders' equity" means the amount of stockholders' investment, i.e., capital, surplus, and undivided profits.

The significant thing about the above figures, as Mr. Anderson says, "is the wide variations in profits from year to year," which "appears to be the result of speculative factors rather than merchandising policies." During the four and one-half years ending December 31, 1927, flour milling profits showed best in the crop years 1926-1927 and 1924-1925.

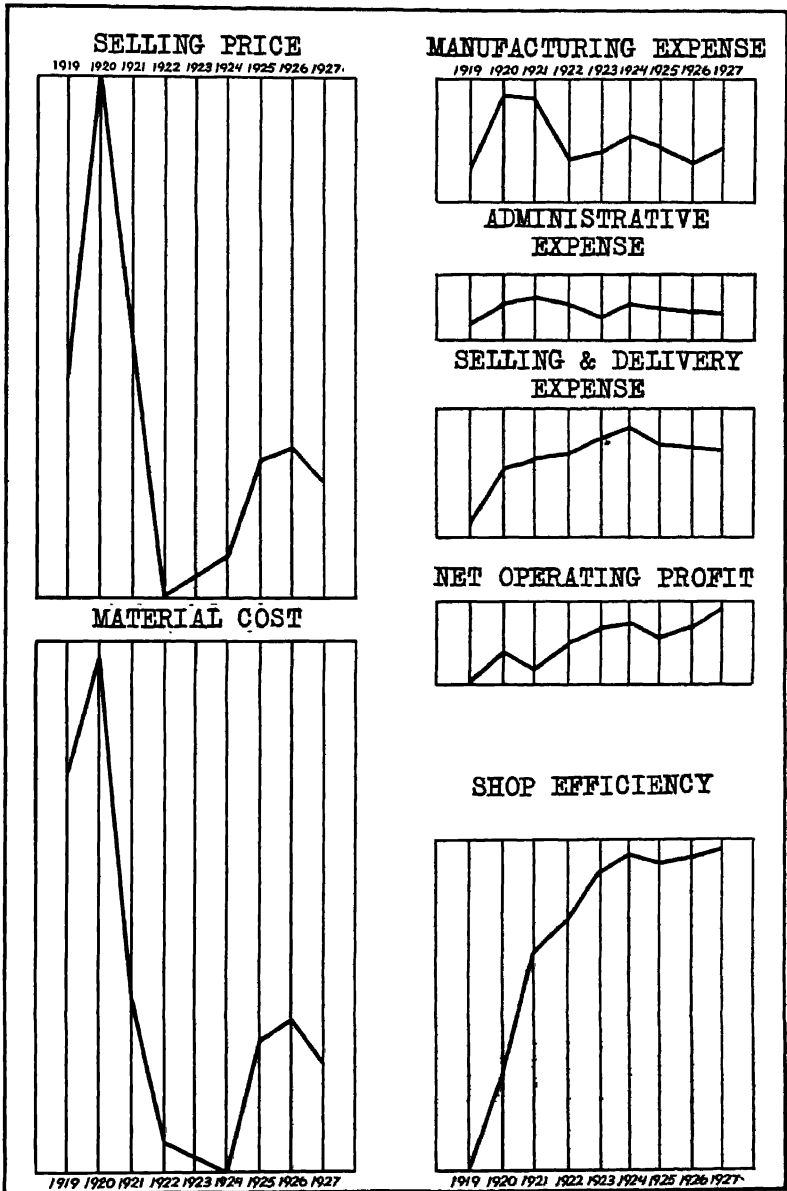
## Baking

The W. E. Long Company, who furnish scientific service for bakers, have contributed an excellent résumé of conditions affecting profits in the baking industry. A portion of their analysis follows:

Generally speaking, we know that there are three factors which are vitally affecting the wholesale baking industry. These are, the high loss from returned goods, commonly spoken of as stale bread; the decrease in the number of outlets for the products of the wholesale bakery; and the decrease in per capita consumption. . . .

The mortality rate in the baking industry is very high for these reasons, and has been very high, due to the fact that it is a business which is very easy to get into. As a result thereof, many markets are over-equipped, with the consequent struggle for business at any price.

Regardless of these facts, the trend of profit in representative bakeries has been on an upward curve since 1919, as illustrated in the charts on page 365. . . .



CHARTS REFLECTING RELATIVE INCREASES AND DECREASES IN UNIT SELLING PRICES AND COSTS, TOGETHER WITH RELATIVE IMPROVED TREND OF SHOP EFFICIENCY

In many individual cases, which have been brought about by highly competitive conditions, we find that the proportion of net profit to the volume of business done has decreased. However, this is not alarming, when the turnover of investment is taken into consideration, or more specifically, the number of units produced per dollar invested.

Despite increasing competition, the earning power of some concerns in the baking industry is holding up, according to the following quotation from the Standard Trade and Securities Bulletin of April 13, 1928.

Analysis of earnings data for 1927 recently made public by a number of the principal companies in the baking products industry indicates that:

(1) the trade as a whole is more prosperous than at any previous time, (2) manufacturers of baking specialties (biscuits, cakes, etc.) are making relatively the best showing, and (3) the trend of sales and earnings in the bread-baking branch is decidedly irregular, with certain concerns enjoying record-breaking returns and others experiencing a declining scale of business and profits.

Not only did baking company earnings, generally considered, establish a new peak last year, but the gain, as compared with 1926, was the most substantial one registered in recent years. Aggregate net income for seven representative concerns which have thus far reported amounted to \$40,043,000, and represented an increase of 14.6% over the total of \$36,491,000 shown for the same producers in 1926. In the last-named year, profits were only about 1% greater than in 1925.

## Meat Packing

During the early months of the 1927 fiscal year, the meat packing companies generally lost money because of having to liquidate their big inventories on a declining price level. Results in 1928 should be better, according to the following forecast from the bulletin of the Standard Trade and Securities Service for March 23, 1928:

Results of packing company operations during the past five months definitely suggest that improved earnings will be reported by most large companies in the fiscal year ending next October. Poor profits throughout the industry last year were due in large measure to high hog prices in the winter packing season and to the subsequent sharp reaction which occasioned severe weakness in pork product prices, with resulting heavy inventory losses. Operations this winter, however, have been on the basis of low cost hogs.

Supplies of pork and lard in storage have increased sharply as a result of the heavy movement of hogs to slaughter centers recently, but

last year's losses through inventory depreciation will almost certainly not be repeated. As hog marketings subside during the next two or three months, prices should strengthen and there is at least a fair chance that seasonal distribution of storage supplies will be effected at prices somewhat above those prevailing during the period of inventory accumulation. Moreover, considerable appreciation in inventory values should be shown at the end of the fiscal year next October.

High cattle prices during 1927 were a further factor in curtailing earnings of the meat packing companies since they resulted in advances in beef prices which at times seriously curtailed retail distribution. While the beef cattle shortage will probably also prevail throughout 1928, prices have reacted somewhat and packers will probably be in a position to avoid heavy marketing losses such as were sustained last year. Moreover, companies with South American interests are now operating under an agreement reached late in 1927 which brought to an end a price war which had for several years seriously reduced earnings in that branch of the industry.

The following table was received from the Institute of American Meat Packers, 509 South Wabash Avenue, Chicago.

PROFITS IN THE PACKING INDUSTRY \*  
1923-1927

Fiscal Year	Number of Companies	Percentage of Net Profits to		Net Profits	Gross Sales	Stock-holders' Investment
		Gross Sales	Stock holders' Investment			
1927	11	.5	2.5	\$13,588,848	\$2,523,545,507	\$632,161,396
1926†	580	1.6	6.0	59,028,778	3,749,868,638	989,916,116
1925	514	1.7	6.9	64,558,247	3,807,988,474	934,597,239
1924	525	2.3	8.6	76,888,346	3,321,964,071	889,919,110
1923	494	2.3	8.3	70,868,572	3,109,048,602	855,023,062

\* Sources: 1927: Reports by individual companies.

1926, 1925, 1924, 1923: Report of Packers and Stockyards Administration, United States Department of Agriculture.

Figures for each year include results of five largest packers: Armour and Company, The Cudahy Packing Company, Morris and Company, Swift and Company, Wilson and Company (four companies after the Armour-Morris merger).

† Change in the fiscal year of two large companies resulted in the filing of reports covering only eight months for one and ten months for the other.

According to the Census of Manufactures, the number of establishments in the food and kindred products business has decreased 3,288 (6.4%) from 51,401 in 1921 to 48,113 in 1925. Wage earners have increased 47,000 (7.6%), from 618,000 in 1921 to 665,000 in

1925, and wages have increased \$57,000,000 (7.7%) from \$737,000,000 to \$794,000,000.

The Census of Manufactures shows that the number of tobacco manufacturing establishments has decreased 1,749 (40%), from 4,372 in 1921 to 2,623 in 1925, and that wage earners have decreased 18,000 (12%), from 150,000 to 132,000. The figures indicate marked consolidation and concentration, and greater use of machinery in replacing man power. Figures do not reflect the real growth in the industry, but value of products shows an increase in spite of declining prices. The lower cost of materials and lower wages are all reflected in the increased margin available for fixed expense, administration, sales effort, and profits. (See Table V.)

### COMMENTS

An executive in a confectionery company reports the following relative to the confectionery industry:

Some of the contributing causes of the narrowing trend of profits in this industry may be briefly stated as follows: first, decreased selling prices; second, unintelligent competition due to lack of knowledge concerning costs; third, large-scale production and distribution through chain stores owned by large manufacturers; price cutting in some cases.

A canned goods packer says:

It is the writer's opinion that, disregarding the overproduction and resulting market conditions apparent the last two years, the canning industry, considered as a whole, has not given sufficient careful attention to the computing of costs and the basing of their selling prices on such average costs with a sufficient amount added to them to permit of a reasonable profit. The serious consideration of this factor is of great importance in this industry due to the natural hazards affecting it, which are absolutely beyond human control.

An executive of a large packing company says:

On the whole, we can say that our tendency throughout these past five years has been toward increased profits, but we do note in most of our industries in 1927 a tendency toward larger volume handled on narrower margins, which, of course, is an indication of the very keen competition that exists.

M. J. Donna, Secretary of the National Macaroni Manufacturers' Association, says;

There is considerable complaint in our industry about ruinous price cutting that has almost wiped out all profit margins. This is particularly true of the group of manufacturers who specialize in bulk goods, though the profits in package goods have gradually been dwindling with the exception of a few of the leading firms.

### TEXTILES AND TEXTILE PRODUCTS, NOT INCLUDING CLOTHING

The results of the N.A.C.A. questionnaires indicate that in 1927 the profits of the 14 firms reporting from the textiles industry were about half what they were in 1923. (Table I-C.) The ratio of profits to sales fell from 6% to 4%. Below are given the figures on which these statements are based:

Year	Ratio of Net Income to Sales	Percentage Based on 100% for 1923		Net Income (000's omitted)	Sales (000's omitted)
		Net Income	Sales		
1927	4.0	48	72	\$1,760	\$44,067
1926	3.1	37	73	1,382	44,463
1925	6.1	86	84	3,168	51,369
1924	Deficit	Deficit	68	—580	41,772
1923	6.0	100	100	3,686	61,104

(See Table I-A, B, and C.)

According to the N.A.C.A. questionnaire, the 12 smaller firms (those whose net profit has not exceeded \$1,000,000 in any one year) made only 24% as much profit in 1927 as in 1923, comparing with a ratio of 48% for the total number of corporations replying.

Twelve textile manufacturing firms whose profits were reported in *Moody's* made only 38% as much in 1927 as in 1923. (See Table II-A.)

Year	Percentage of 1923 Income	Net Income (000's omitted)
1927	38	\$ 8,649
1926	Deficit	—2,941
1925	24	5,517
1924	Deficit	—7,071
1923	100	22,969

The National City Bank in a survey of 709 firms, reports the profits of cotton, silk, and woolen manufacturing firms for 1925, 1926, and 1927 as follows:

	(000's omitted)		
	Cotton Manufacturing	Silk Manufacturing	Woolen Manufacturing
	23	9	5
Number of Firms			
Profits 1927.....	\$10,490	\$ 4,858	\$3,299
1926.....	—1,820	6,465	—1,997
1925.....	3,459	10,392	2,033

This would indicate that since 1925 conditions in the cotton manufacturing industry have been improving; in silk manufacturing, growing worse; and in woolen manufacturing improving somewhat, though not so much as in cotton.

According to the income tax statistics, the number of corporations in textile and clothing industries filing tax returns has steadily increased from 10,121 in 1920 to 12,271 in 1925. (See Table IV-B.) However, the Census of Manufactures indicates that the total number of establishments (individuals and corporations) have decreased from 25,960 in 1921 to 24,333 in 1925, a drop of 6%. At the same time the number of wage earners increased 7%—from 1,510,000 to 1,627,000. (See Table V.) According to the Census report, the cost of raw material in 1921 was 55% of the value of finished product—in 1925 it was 59%. Although the percentage of wages to value of finished goods dropped from 21% in 1921 to 18% in 1925, it did not compensate the increase in the proportionate cost of raw materials. Consequently, the gross margin over wages and material costs which was 24% in 1921 was 23% in 1925. The year 1923 apparently was a more profitable year than either 1921 or 1925.

There have been strenuous readjustments in the textile industry and numerous failures. Although value of products has increased, the increase is more than absorbed by the additional cost of materials. The increase in cost of raw materials in spite of the decline in the price index points to greater physical volume in 1925 than in 1921, but at a lower percentage gross margin over cost of materials and wages.

As compared with 1923, there was a decline in value of products and a greater proportionate decrease in the gross margins.

The following paragraphs covering various branches of the textile industry are summarized from the Standard Statistics Service.

**RAYON.**—This is a rapidly expanding industry. The price of the product is stable, rayon being quite unaffected by pests or climatic conditions. Profits have been rapidly increasing in the last few years. Smaller companies may have difficulty covering expenses, but larger concerns are very prosperous. Large expansion in facilities for producing fiber will probably result in keener competition, lower prices, and perhaps reduced ratio of profits.

**COTTON.**—Probably 1928 crop will be short, though not so short as that of 1927. Evidently hard times in cotton mills have had some effect on management, for production generally is being more closely regulated to demand than for some time. Cloth prices are too low in comparison with raw cotton prices, mill production is greatly reduced, and profits of the industry will probably continue unsatisfactory for at least the present fiscal period. However, 1927 was the best period the domestic cotton goods manufacturing industry has enjoyed since 1923.

**WOOL.**—Position of woolen goods manufacturing is unsatisfactory but strengthening. Profit margins are still decidedly narrow. Past experience indicates that the principal companies can make respectable profits only when their mills are operating above 90% capacity, and it is not probable that the industry will operate at more than 70% for some months to come.

**SILK.**—From profits aspect, last year was one of the poorest in the history of the trade. The 1927 results will surpass those for 1926, but they will be far from satisfactory. A steadily declining level of raw silk prices, which has led buyers to demand unjustifiably low cloth quotations, and constant overproduction, have been the principal depressing factors.

That a carefully regulated volume of production is the industry's chief need is indicated by the experience of the velvet branch during last year. This is one of the very few divisions in which production has been closely aligned with actual consumption, and

the result is that the principal companies enjoyed in 1927 an excellent year—Profits increased sharply as compared with the year 1926.

The 1928 showing of the silk industry will depend largely upon a more general adoption of the principle of adapting production to sales rather than attempting to force sales in order to meet production.

An executive of a company manufacturing worsted goods writes as follows:

Taking our industry as a whole we have always felt that lack of coöperation in upholding the fundamental principles of good business has brought about our present trying conditions.

First, it is a recognized fact that an order is not worth the paper it is written upon unless the merchandise is desirable at the time of delivery.

Second, the terms of sale are such that those securing the business are the parties who can, or who think they can, afford to wait the longest for their money.

Third, production is placed above profit, not only by those manufacturing the fabric, but particularly by those making the garment.

Fourth, it is a recognized fact that our industry is cluttered with obsolete machinery and methods. It is a fertile field for mechanical and chemical research.

Fifth, the industry lacking unity seemingly fails to recognize the fact that while competition within is keen the real competitive struggle is between our industry and the automobile industry, or radios, or moving pictures, etc.

Another expression as to the cause of the depression in the textile industry was received from another textile company.

Both sales and profits have had a downward trend for the past three years in our business, due I believe to the following:

1. Falling off in the demand for cotton warps, the uses of cotton in clothing, etc.
2. Overproduction by mills, who will later dump this overproduction of stock on the market, thereby setting a price for other mills.
3. Lack of complete or definite knowledge of actual costs by mill operators.

The following table of dividends paid by Fall River and New Bedford textile mills is indicative of the general trend of profits in the industry.

Year	Total Dividends Average per Quarter		Per Cent on Capitalization Average per Quarter	
	Fall River	New Bedford	Fall River	New Bedford
1927	\$ 298,800	\$ 570,000	.730%	.788%
1926	305,011	703,000	.722	1.024
1925	536,500	981,000	1.217	1.325
1924	705,000	942,000	1.609	1.285
1923	882,000	1,258,000	2.061	1.741
1922	762,000	1,500,000	1.997	2.429
1921	779,300	1,365,000	2.031	2.299
1920	2,521,000	2,268,000	7.486	4.390
1919	1,208,300	1,681,000	3.651	3.324
1918	1,512,100	1,603,000	4.594	3.164
1917	1,053,700	1,471,000	3.338	3.001
1916	512,500	746,000	1.734	1.832
1915	283,400	653,000	.974	1.645
1914	310,900	470,000	1.084	1.197
1913	518,900	547,000	1.820	1.405 .

Source: *Standard Statistical Bulletin*.

### CLOTHING

Replies to N.A.C.A. questionnaires were received from 21 firms in the clothing industry. These returns indicate fairly prosperous years in 1923 and 1925, when net income was approximately 7% of sales. The year 1926 showed a decided drop in net income, returning only 5% of sales. These data are tabulated below. All of the 21 firms may be classed as small, none having an income of over \$1,000,000 in any year.

Year	Per Cent Income of Sales	Per Cent Income of 1923	Income	Sales
1927	5.2%	77%	\$2,456,000	\$47,465,000
1926	4.5	67	2,137,000	47,556,000
1925	7.4	116	3,666,000	49,613,000
1924	5.2	72	2,282,000	44,108,000
1923	6.7	100	3,170,000	47,624,000

Data for 10 clothing manufacturers listed in *Moody's Manual* (tabulated in Table II-A) show the same general ups and downs as the data summarized from the N.A.C.A. questionnaires. The figures from *Moody's Manual* cover 6 large and 4 smaller corporations. A comparison of relative profits on the basis of 1923 would

indicate that the larger companies are making more money, relatively, than the smaller ones:

Year	10 Clothing Mfgs.	6 Large Clothing Mfgs.	4 Small Clothing Mfgs.
1927	79%	84%	58%
1926	74	75	70
1925	77	81	61
1924	43	46	29
1923	100	100	100

The Standard Statistics Service (March 16, 1928) comments on the situation in the clothing industry as follows:

Trade authorities are agreed that probably the most significant development in the industry last year was the decided trend, especially in the clothing branch, of business to the larger organizations, which hold important merchandising and producing advantages over their smaller competitors. In the opinion of these observers, it is becoming increasingly evident that the manufacture of apparel requires capital and organization on a much larger scale than was necessary a few years ago.

There is apparently a tendency toward concentration, and it is predicted that there will be a number of mergers in the clothing industry during the next few years.

Those who are engaged in clothing manufacturing place the blame for the low profits of 1926 and 1927 upon overproduction and price cutting, if the comments of those who replied to the N.A.C.A. questionnaire may be regarded as typical. A few of these expressions are quoted below:

### **An Eastern Hosiery Company**

We . . . feel that there is an opening for the improvement of costing methods among the different mills.

### **President of a Manufacturing Clothing Company**

From the wholesale end of it, the thing that would help remedy conditions most would be a determined policy on the part of the manufacturers not to dump goods on the market at off prices when the retail season is just about to begin. If they could wait until the season was over and then sell their surplus stock at off prices, enabling the retailers to dispose of them during the dull months, it would be a very great advan-

tage. As it is, the consumer is educated to wait for sales which come along early in the season. The competition from other trades, such as automobiles, radio, etc., has a very direct bearing on the marketing of necessities, especially since the development of the installment method of doing business has progressed so far.

### **An Overall and Working Clothes Manufacturing Company**

Not only are profits narrowing and does much overproduction exist, but it seems difficult for us to get together in our association activities to curb some of the ruinous practices which interfere with normal profits.

### **An Overall Manufacturing Company**

. . . Overproduction, agricultural unrest, and prison-made goods thrown upon the market in direct competition to free labor. The latter effect being to absorb business rightly belonging to legitimate manufacturers, who, in desperation to reduce heavy stocks, resort to price cutting regardless of costs and at the expense of profits.

### **A Hosiery Company**

In our opinion the reason for the declining profits can be attributed in our mill (manufacturing men's seamless fancy half hose) to three sources:

1. Overproduction. During the war too many mills sprang up, so that we have 3,000 mills in the United States and Canada to-day, making hosiery. One-half would be a-plenty.
2. Cutthroat competition. This is caused by the southern manufacturers, who can produce the same type of merchandise from 15 cents to 25 cents a dozen cheaper, due to the low wages and other economies attributable to the South.
3. Lower index figures. It is a well-known fact that the wholesale price of men's fancy half hose has been declining considerably since 1925. . . . It is true that this cut has been made to some extent at the expense of materials, but on the general run the jobber receives more value than he did formerly.

## **LEATHER AND LEATHER GOODS**

The leather industry enjoyed a profitable year in 1927. The fifteen firms replying to the N.A.C.A. questionnaires showed an aggregate of profits far ahead of any of the preceding four years. The aggregate net profit on sales was 14.4% for the group as com-

pared with 11.7 in 1926 and 10.1 in 1923. The proportionate increase in profits as compared with 1923 was as follows:

1927 .....	159%
1926 .....	121%
1925 .....	117%
1924 .....	119%
1923 .....	100%

None of the fifteen firms replying to the questionnaire had profits of \$1,000,000 or more in any one year.

Data published by the National City Bank (See Table III-A) show that the profits of 11 firms in 1927 were 57% over 1926 and 31% over 1925.

The six corporations for which profit figures were taken from *Moody's* (See Table II-A) showed an aggregate deficit in 1923, but operated at a profit in each of the succeeding years. The 1927 profits of this particular group were more than double the profits of 1926.

Income tax statistics (See Table IV-B) are available only including 1925. These data show the leather industry suffering huge losses in 1920 and 1921, recovering in 1922, and taking a less serious slump in 1923 and 1924. In 1925 there were only 11 firms which reported profits of \$1,000,000 and over, but these 11 accounted for 42% of all profits reported.

The Census of Manufactures (Table V) shows that the number of establishments engaged in the manufacture of leather and leather goods decreased 11% from 1921 to 1925. At the same time the number of wage earners increased 12½%.

Leather prices have increased considerably since a year ago, and the sales prices of shoes and other finished leather products have advanced more slowly. Chains which advertise shoes at fixed prices are naturally reluctant to increase prices and must therefore either lower quality or accept reduced margins of profit. In the face of these conditions it can hardly be expected that the leather industry in the aggregate will show as much profit in 1928 as in 1927.

Expressions were received from a number of those who replied to the N.A.C.A. questionnaire. They appear to feel that the margin of profit in the shoe and leather industry is becoming narrower, and assign as the principal causes a lack of knowledge of costs and

increasing expenses of distribution. Some of these expressions are given below :

### **National Leather and Shoe Finders' Association, St. Louis, Mo.**

The two reasons for a narrowing margin of profit in our industry are these:

First, lack of knowledge of the cost of doing business on the part of a large percentage of our jobbers, and

Second, because our manufacturers and tanners are too anxious to count as their customers every Tom, Dick, and Harry in the business.

The remedies that we suggest in our line are, first, a closer study of the cost of doing business, and second, a selective distribution of goods of merit on the part of the manufacturers and tanners.

### **National Boot and Shoe Manufacturers' Association, New York**

From our point of view there are numerous causes (for the narrowing margin of profit), the foremost of which are:

Keenest competition in both manufacturing and selling, with volume as the goal, price being of secondary consideration.

Second, a great many newcomers in the shoe business, some fully equipped for the undertaking, others not so well. Those not fully equipped do the damage. Also, costs are not understood and no efforts are made, apparently, to establish the costs, with the result that shoes are sold at prices not conducive to legitimate gross profit margins.

### **The Walk-Over Dealers' Association, Newark, Ohio**

It has been said that 75% of the shoe retailers are broke and do not know it. Certainly a lot of them are, and something must be done to help the average shoe man who knows very little about costs and percentages.

One of the things in the shoe business that is wrong is the fact that manufacturers extend credit to most any one who wants to open a shoe store, most of them really not equipped to run a store, and they do not find out how complex the business is until they are in it.

An executive of a leather goods company gives as reasons for small profits in leather business:

Fifteen years ago we had less than thirty-five concerns in the country who could be called competitors. To-day there are about one hundred more. The total normal production of these concerns is more than the country's requirements, and a very small amount of hand luggage is exported. . . . The department stores are the largest buyers of our merchandise, and their business is so attractive to manufacturers that, whenever quantity business is in prospect, there is so much competition that the purchase is eventually made at cost or even less to manufacturer.

## RUBBER AND RUBBER GOODS

The rubber and rubber goods industry was badly hit by the depression of 1920 and 1921, on account of the tremendous drop in the value of rubber inventories. In 1920, 392 out of 671 companies in this field rendering Federal Income Tax returns reported losses, and in 1921, 445 out of 641 companies reported losses. Indeed, the profits for the next three succeeding years, 1922, 1923, 1924, failed by some \$18,000,000 to offset the staggering losses of over \$101,000,000 in this field in 1921 and 1922. In 1924, the concerns reporting a profit showed a majority of returns for the first time in the post-war period, which more favorable condition was largely augmented in 1925, the last year for which the Income Tax figures are available (See Table IV-B.)

The figures tabulated from the N.A.C.A. questionnaire for 8 companies from 1923 to 1927 confirm the upward trend shown by the income tax returns from 1923 to 1925, 1925 apparently marking the high peak for profits in recent years. The net income of 350 corporations as listed in *Moody's* and in the *Commercial and Financial Chronicle*, using 1923 as a base, showed the following trend (See Table II-A):

1927 .....	165%
1926 .....	151%
1925 .....	314%
1924 .....	180%
1923 .....	100%

The N.A.C.A. results also show a decline in profits for 1926 and 1927, although the decline of 1926 from 1925 was not very great, and that of 1927 as compared to 1925 was much greater. Figures given by the National City Bank in its April, 1928, bulletin support the tabulation given above showing 1925 as the high peak, with the profit in 1926 as only 48% of that in 1925 and the profit in 1927 as 70% of the 1925 figure.

The trend of profits in this industry is governed to a considerable extent by the effect of the restrictive measures by the British Government through the Stevenson Act. The increases in profits culminating in 1925 apparently represent, among other factors, a rise in inventory prices, as a result of the control maintained over

production, and consequently prices, by the Stevenson Act. Beginning in 1926, and continuing into 1927 and 1928, other markets have begun to throw their production on the market; this has caused inventory losses, and general business uncertainty. Of course, the effect of legislative control over rubber output does not, without regard to other factors, explain the trend in prices; but it is interesting to note how marked the correlation is between the profits of rubber companies and the price trend as a result of legislative enactments.

The present plan to remove the British restriction on rubber exports next November is causing a period readjustment in this industry. In anticipation of this readjustment the United States Rubber Company discontinued on April 6 the dividends on its \$65,000,000 8% preferred stock, this being the first time that dividends have been omitted since 1905 when the stock was issued. The tremendous losses that are possible in this industry may be gauged by an estimate made by O. O. Mather in the *Chicago Tribune* of April 7, 1928, that a drop of a cent a pound in crude rubber prices would mean a loss of over \$5,500,000. From February 1 to April 6, the decline in crude rubber prices was 20 cents a pound, but the manufacturers are confident that, although profits will be lost for a large part of 1928, there will be no marked reductions in tire prices and the prices of other rubber goods for a sufficient time to work off a considerable portion of the inventories on hand at the time of the drastic price declines.

To summarize, the rubber industry has had its "ups and downs," or rather "downs and ups"—"down" in 1920-1923, "up" in 1924 and 1925, somewhat "down" in 1926 and 1927, and with a possibility of "down" in 1928, dependent, however, upon the developments of the immediate future on crude rubber.

## LUMBER AND WOOD PRODUCTS

In the field of lumber and millwork manufacturing, there were 15 firms which divulged their profits and sales figures in answer to the N.A.C.A. questionnaire. Although the aggregate profits of this group show proportionately greater earnings in 1927 than in 1923, yet this result is due to the success of one particular large company. The totals of the 14 smaller companies, while making a better showing in 1927 than in 1926, were far below the level of

1923, and many of them have been in the red for the past three years. The following percentages for the group of 14 firms (omitting the one large company) tell the story. (See Table I-E and F.)

Year	Per Cent Profits to Sales	Per Cent of 1923	
		Profits	Sales
1927	5.6%	48%	83%
1926	4.6	43	91
1925	6.4	62	95
1924	6.3	57	88
1923	9.8	100	100

Income tax statistics which are available to 1925 bear out the trend of the above figures up to that point. (See Table IV-C.) The data compiled from *Moody's* reports also show that there has been a general downward trend in the lumber and wood products industry. (See Table II-A, B, and C.)

One manufacturer of interior trim expresses himself as follows:

This company is now thirty years old and has always enjoyed a good business . . . has always made money, and never failed so far to pay a dividend. . . . We are members of the Millwork Cost Bureau and have operated a cost finding system since 1920. We send our members to all conventions, and have ten of our employees taking their courses, so we think we know our costs as well if not better than do our competitors. In comparing the figures that jobs have gone for, and the prices we had in, the other was below our cost, so we don't see how some can hope to make a profit.

Apparently the lumber supply is not properly adjusted to the demand. It is possible that a part of the overproduction has been brought about by substitution of other materials for lumber. One who contributed information writes:

The underlying cause of the downward trend that has been quite obvious in this industry is primarily overproduction. This is caused principally by new manufacturers entering the field; also by improved methods of manufacture which have greatly enlarged the capacity of a lot of the older operators.

To judge from the following statement, there is a fertile field for the cost accountant in the lumber industries:

We believe one of the reasons for the lowering margin of profit in the lumber business is the lack of sufficient cost information. Very few

lumber concerns here have any kind of a cost system and are taking business at all sorts of prices. We have a very complete cost system and are able to get a monthly profit and loss statement as well as costs on any specific item of millwork. We, therefore, are in a position to know what our selling prices should be to include a reasonable margin of profit, and also to know the selling prices of our competitors, as we have refused a great many contracts which we know positively would give us a loss.

However, not all of the lumber manufacturers are pessimistic. Here is one who says, "It is sometimes a good thing to run into a period of low earnings in order to sharpen up the management, so to speak."

Under the allied classification of Furniture Manufacturing, the N.A.C.A. questionnaire brought sixteen replies. The general trend of profits has been decidedly downward (See Table I-B and C):

Year	Per Cent Profits to Sales	Per Cent of 1923	
		Profits	Sales
1927	6.8%	53%	96%
1926	9.8	84	107
1925	8.6	70	101
1924	8.4	63	94
1923	12.5	100	100

The total sales volume in 1927 was only 4% less than in 1923 but the percentage of profits to net sales dropped from 12.5% to 6.8% during the same period.

"Our trouble at the present time is due entirely to overproduction," writes one furniture manufacturer. "There is a good healthy demand for furniture, but the supply is in excess of this demand. This condition has been brought about through the development of labor-saving machinery and the enlargement of factories which occurred during a period of four or five years after the war."

Another contributes the following:

With the public demand increasing at a lower rate than producing capacity, and with lower prices, you can understand how the manufacturers can be complaining about poor profits and working only part time in spite of the fact that they are probably producing more pieces of furniture than at any time in the past.

In other words, it strikes me we are passing through what is similar—to a less extent, of course—to the so-called "Industrial Revolution" of the early nineteenth century in England,

It would be possible to quote half a dozen other manufacturers who express virtually the same idea of the cause of the present depression in the furniture industry. It is the old story of price cutting to get volume without profit.

### PAPER, PULP, AND PRODUCTS

In the paper, pulp, and products industry, seventeen firms replied to the N.A.C.A. questionnaire. Of these, three had net incomes of \$1,000,000 or over in one or more of the five years under consideration. (See Table I-B and C.)

Year	Percentage of Net Income to Sales	Percentage of 1923	
		Net Income	Sales
1927	12.6%	115%	108%
1926	12.7	115	107
1925	12.2	107	104
1924	11.4	96	99
1923	11.9	100	100

The above tabulation would indicate that for the last five years, for the industry as a whole, the trend of both profits and sales has been upward. The data indicate also that the sales trend has been very nearly the same for the large and small organizations, but the profits of the larger firms have increased more as between 1923 and 1927, than have those of the smaller firms. In the percentage of net income to sales also the larger firms have a decided advantage. For the larger firms, 1925 was the best year of the five, while for the smaller firms, honors are divided between 1923 and 1927.

A study of the net incomes of 10 manufacturers of paper, pulp, and products, as published in *Moody's*, indicates a downward trend, as will be seen from the following tabulation:

Year	Percentage of 1923 Income		
	10 Firms	5 Firms Having Incomes Over \$1,000,000	5 Firms Having Incomes Under \$1,000,000
1927	71%	68%	84%
1926	74	71	90
1925	83	81	94
1924	82	85	68
1923	100	100	100

About the only point in which these figures agree with those compiled from the questionnaires is that, for the industry as a whole, 1925 was better than the years following.

This same contention is borne out by the data published in the bulletin of the National City Bank for April, 1928, which gives the profits of 11 corporations manufacturing paper and paper products as follows:

1927 .....	\$6,759,000	81%
1926 .....	6,652,000	80%
1925 .....	8,287,000	100%

The number of paper manufacturing firms making Federal Income Tax returns and the incomes indicated for the six years 1920-1925 are as follows (See Table IV-B):

Year	Number of Returns	Net Income Profits Less Deficits	
		Total	Average
1925	1,940	\$ 99,049,000	\$ 51,200
1924	1,886	74,313,000	39,400
1923	1,815	94,977,000	52,200
1922	1,769	61,616,000	34,800
1921	1,676	—4,297,000	—2,500
1920	1,693	237,581,000	140,000

This would indicate that while the total profits of the firms reporting increased slightly between 1923 and 1925 the number of returns increased in somewhat greater proportion, so that for the individual firm 1923 was a somewhat better year than 1925. Even in 1925, however, with 14% more firms reporting than in 1920, the total income reported was only 41% of that reported in 1920.

In common with other industries, the paper industry has been suffering from acute overproduction, with the usual accompaniment of price-cutting and reduced profits—or in some cases, no profits at all. The usual remedies seem applicable—adjusting production to demand (perhaps by adopting the five-day week), adequate cost accounting, and refusal to cut prices below the profit line. One manufacturer, in a letter accompanying a questionnaire said:

It is my conviction that cost accounting or cost systems seem to have little bearing on the deplorable earning capacity of our industry. It is not

that those in it do not know their costs, as most of them have good cost accounting systems; but it is that they ignore them through vindictive competition, incompetent business management, or some kind of fatuous belief that they can trade a real dollar's worth of merchandise for eighty cents if they have volume enough.

That those who have cost systems and use them as a guide to prices can make money is indicated by the following letter from another manufacturer:

In 1926 our profits were 25% better than any of the previous years, and in 1927 were the highest we have had, with the exception of one year during the war when prices were very high.

Our profit trend has been upward in the last five years, and we hope to keep it going up.

We consider it is due to the very careful and constant consideration of our costs, a very thorough and constant cost system, a watchfulness of waste, and a thorough market analysis.

In the opinion of the Standard Trade and Securities Service, the paper industry is on the up-grade.

From the standpoint of earnings, 1928 is likely to be a better year than 1927 . . . although in comparatively few instances are returns expected to be entirely satisfactory.

### PRINTING AND PUBLISHING

All the data tabulated on the printing and publishing industry support the conclusion that there has been a generally upward trend of profits during the past few years.

As only three returns from this industry were reviewed in answer to the N.A.C.A. questionnaire (See Table I-A, B, and C), the results from this source can hardly be said to be representative, but the gradual annual increase in profits shown by the N.A.C.A. questionnaire results is also supported by the National City Bank report in its April, 1928, bulletin, which shows the following condition for 15 companies.

Year	Profits in Thousands of Dollars	Per Cent with 1925 as Base
1927	\$29,775	118%
1926	25,364	101
1925	25,131	100

The reports on four companies from *Moody's* and *Commercial and Financial Chronicle*, using 1923 as 100% shows the same general trend (See Table II-A, B, and C) :

Year	Per Cent with 1923 as base
1927 .....	134%
1926 .....	110%
1925 .....	97%
1924 .....	94%
1923 .....	100%

The Federal Income Tax figures for the five years ending in 1925 also show a generally rising trend of profits with slumps in 1923 and 1924 and a poor year in 1921. Even in 1921, when 185,158 returns out of a total 356,397 received from all industries showed a loss, the printing and publishing industry showed losses in only 3,046 out of 8,432 returns.

In considering the relatively favorable results in the printing and publishing industry, it is of especial interest to cost accountants to mind the fact that there has been in operation for a long period of time, through the United Typothetae of America, a very successful cost system which is used by many members of the industry. There is no question that the intelligent use of this standard cost accounting system and the comparative detailed reports published by the United Typothetae of America have been an important factor in increasing the profit trend in this industry.

### CHEMICALS, PAINTS, ETC.

There were seventeen replies to the N.A.C.A. questionnaire from manufacturers of chemicals, paints, etc. Their record is one of increasing prosperity year after year. (See Table I-A, B, and C.)

Year	Per Cent Profits to Sales	Per Cent of 1923	
		Profits	Sales
1927	13.8%	149%	125%
1926	13.9	146	121
1925	13.6	131	111
1924	11.9	102	99
1923	11.5	100	100

The data compiled by the National City Bank for thirty-three companies in the chemical line indicate exactly the same trend of profits as the N.A.C.A. questionnaires. (See Table III-A.) The Income Tax statistics (Table IV-B and C) and the profit figures compiled from *Moody's Manuals* also corroborate the evidence as taken from the N.A.C.A. replies. (See Table II-A.)

In the chemical industry, as in many others, the increase in profits was accomplished principally by the large corporations. The 15 small companies which replied to the questionnaire made profits of only 7.8% on sales (See Table I-E) while the percentage for all 17 reports was 13.8%.

The statistics of manufacturers (Table V) indicate a healthy growth in the chemical industry, both as to increase in the number of wage earners and in the value of products. There was a slight decrease in the number of establishments reporting to the Census of Manufacturers in 1925 as compared with 1921, but the number of wage earners was 381,000 in 1925 as compared with 314,000 in 1921, a gain of 21%. During the same period the value of chemical products increased from \$4,594,000,000 to \$6,438,000,000, or about 40%.

However, even in this generally prosperous industry some lines are apparently suffering, as is evidenced by the following expression from the Insecticide and Disinfectant Manufacturers Association:

So far as the price trend is concerned in the disinfectant industry where bulk sales are involved, the writer can testify that it has been distinctly downward over a period of ten or twelve years. Sales are larger to-day than ever before, but the percentage of profit is much smaller. This condition we attribute to several causes: First, by unrestricted *price-cutting* on the part of the less responsible makers we hope thereby to secure more business. Second, the lack of a coordinated campaign in which the public is educated to demand trade-marked goods. Third, the fact that it is impossible for the consumer to distinguish between goods of merit and those that are practically worthless. . . . Fourth, while the Department of Agriculture at Washington employs a corps of field inspectors periodically to test these products and to cite for misbranding any manufacturer who does not produce a material which is capable of showing the results claimed for it, this force is entirely too small and inadequate properly to cover the industry, so that a number of disinfectant makers and even insecticide producers are "taking a chance."

Another contributing factor to the low price trend is that so many makers of both insecticides and disinfectants *do not know their costs*.

The paragraphs quoted below are typical as showing the trend of the industry:

We feel that the chemical industry is coming into its own. It has progressed very rapidly in the last few years, and the progress is due, in large measure, to the heavy expenditures for research. The chemical research determines the use, new methods, new materials, and produces new products, or old products of a better quality or adaptability.

The chemical research has been followed by engineering research and to some extent, *administration and cost research*. There is a constant urge to improve. We are inclined to think other industries will find expenditures for research profitable.

According to the Standard Statistics Service, the outlook for 1928 promises substantial gains.

### STONE, CLAY, AND GLASS PRODUCTS

Although 1927 brought a slight decrease in profits as compared with 1926, yet the general trend has been upward since 1923 according to the thirteen replies received to the N.A.C.A. questionnaire. However, while the total profits were increasing, the tendency of the percentage of profits on sales has been downward.

Year	Per Cent Profits to Sales	Per Cent of 1923	
		Profits	Sales
1927	16.7%	114%	130%
1926	17.4	118	128
1925	17.8	108	116
1924	19.3	104	102
1923	18.9	100	100

It cannot be said with any degree of certainty that these figures reflect the true situation in the stone, clay, and glass industry because the percentages are unduly influenced by one particularly large corporation. The 11 smaller concerns making reports show an entirely different tendency:

Year	Per Cent Profits to Sales	Per Cent of 1923	
		Profits	Sales
1927	5.3%	30%	80%
1926	8.4	51	84
1925	6.4	38	82
1924	11.1	69	86
1923	14.0	100	100

Furthermore, the data compiled from *Moody's Manuals*, indicate profits in 1927 only 60% as great as in 1923, for the 11 companies selected from that source (9 of which are classed as large, having profits of \$1,000,000 or over in one or more years of the five-year period.)

The income tax statistics (Tables IV-B and C) show somewhat the same tendency as the data compiled from *Moody's*, although the income tax data extend only to 1925.

The data from all sources appear to agree that the large corporations have made proportionately greater profits than the smaller concerns.

The American Face Brick Association comments on the situation as follows:

The profit trend in our industry has been downward for the past six or seven years. The turnover in our industry is very slow. For this reason, principally, there is a well-defined feeling throughout our industry that if a plant is unable to operate at full capacity, the chance for profit is negligible.

The consumption of face brick has tripled since 1921. Even with this large growth in consumption, we have overproduced practically every year. Large numbers of new concerns have entered our field, and the manufacturers who were established ten years ago have continued to run at heavy rates of production, selling a little less than their production each year, thus building up a larger and larger stock at the end of each year.

This situation developed an acute condition in 1927 with the result that probably one-half of the face brick plants in the United States have had to close down for a longer period than usual this winter.

This condition has not been wholly unfortunate, for many manufacturers have been having the opportunity to make a study of what is really the matter. As a result, there is renewed interest in *cost finding* and study of *budgetary control*. I also notice that there is more interest than for many years in the serious problem of *wastes in sales and distribution methods*.

One manufacturer discusses in considerable detail the effect of the Sherman Anti-Trust Law upon the industry, and concludes with the following paragraphs:

The time has also come when a discussion of the high cost of distribution will shortly revolve into a discussion of the breakdown of our present distributive system. The cost of distribution is subject to the same laws of supply and demand and diminishing returns that govern all other economic factors. There are many lines to-day comprising many products which the public would be glad to be able to purchase but which are not

offered to it on account of the prohibitive cost of distribution of existing lines which uselessly eat up the marginal purchasing power that could be used to absorb these dormant products. In turn, the production of these dormant products would re-employ a large proportion of the four million idle workers whose support, in one way or another, is an added economic loss to the country.

To summarize: There is nothing wrong with the cost of production; there is everything wrong with the cost of distribution. The Sherman Anti-Trust Law has become perhaps the greatest single factor in maintaining the high cost of distribution. You could accomplish nothing of greater benefit to the economic welfare of the United States than to support or initiate a movement to tear this law bodily from the statute books of the Nation, and substitute for it something really suited to the economic structure of to-day.

### ELECTRICAL EQUIPMENT

The nine establishments manufacturing electrical equipment, making returns to the N.A.C.A. questionnaire, report a substantial increase in profits in 1927, as compared with 1926, and a gain in 1927 of 34% as compared with 1923. The percentage of profits on sales was 11.8% in 1927 as compared with 8.4% in 1926 and 10.3% in 1923. (See Tables I-A, B, and C.)

Year	Per Cent Profits to Sales	Per Cent of 1923	
		Profits	Sales
1927	11.8%	134%	117%
1926	8.4	116	142
1925	10.5	119	117
1924	12.5	130	108
1923	10.3	100	100

Eight of the nine concerns reporting were classed as "small," having profits of less than \$1,000,000 in any year. Reference to Table I-F reveals that these eight concerns made more than twice as much profit in 1927 as in 1923 while sales were only 30% higher. The percentage of profits to sales for these eight concerns was 13.5% in 1927 as compared with 8.3% in 1923. (See Table I-E.)

The profit figures compiled from *Moody's Manuals* (Table II-A) for seven "large" concerns manufacturing electrical equipment, indicate a steady increase in profits, 1927 being 47% higher than 1923. The data published by the National City Bank (Table III-A) shows profits of \$80,579,000 for 21 concerns in 1927 as compared with \$80,974,000 in 1926 and \$72,556,000 in 1925.

Although in general electrical equipment manufacturing is on a profitable basis, one contributor writes:

An abnormal tendency has developed in the armored cable division of the electrical manufacturing industry to a lower price for the finished product. This is occasioned by competition, overproduction, business policies.

The market price of finished goods has not been based upon the principle of cost of material plus normal additions. The results of the past two or three years have probably been occasioned more by business policy rather than destructive competition.

Another manufacturer gives us the following:

Unquestionably it is costing more money to sell goods.

Too many builders of specialty lines fail to fill in new lines as the older ones become commodities. Those houses which do not keep abreast of the times suffer, but houses progressive and with originality have abundant opportunity.

Relative to the prospects for 1928, the Standard Statistics Bulletin of March 2, 1928, says:

With the upward trend in manufacturing schedule contributing to further gains in production efficiency this year, earnings of most of the large companies in the industry will, in the first half of 1928, at least equal, and possibly slightly exceed those of a year ago.

### AUTOMOBILES AND ACCESSORIES

The prominence of General Motors Corporation in the automobile production field makes it necessary to consider its earnings as a separate item. The remarkable increase in the profits earned by this corporation is common knowledge, but for purposes of ready comparison with certain of the other companies in the same group, the following tabulation in thousands of dollars is taken from a survey compiled by the Cleveland Federal Reserve Bank, and published by courtesy of E. R. Fancher, Governor (See Table III-B):

Year	Total (000's omitted)	General Motors	11 Other Companies
1927	\$335,973	\$235,105	\$100,868
1926	300,947	186,231	114,716
1925	238,707	116,016	122,691
1924	125,273	51,623	73,650
1923	150,172	72,009	78,163
1922	121,881	54,474	67,407
1921	—37,450	—38,631	1,181
1920	89,441	37,750	51,691
1919	111,938	60,005	51,933

Up to and including 1924, General Motors' competitors showed a more constant rate of increase, but in the last three years, General Motors has forged ahead in profits while the profits of its competitors have declined.

The results of another study by the National City Bank show the same trend in 1925-1927. (See Table III-A.)

Year	Total (000's omitted)	Profits of General Motors	Profits of 26 Other Companies
1927	\$329,230	\$235,105	\$ 94,125
1926	313,465	194,645	118,820
1925	275,570	126,617	148,953

The results of the N.A.C.A. questionnaire also support the same trend:

Year	Total (000's omitted)	Profits of General Motors	Profits of 7 Other Companies (N.A.C.A.)
1927	\$287,504	\$235,105	\$52,399
1926	242,695	186,231	56,464
1925	197,643	116,016	81,627
1924	102,741	51,623	51,118
1923	121,591	72,009	49,582

The Income Tax Report figures for automobiles are not available, as automobiles are included with other products under the heading of "Metal Goods." Another missing element in the figures on the automobile industry is the absence of any authentic figures on the profits of the Ford Motor Company, but sufficient information is available for us to draw a rather definite conclusion that the profits of this corporation have been greatly reduced or perhaps eliminated during the last twelve months while the "new Ford" was being developed and placed on the market.

Viewing the industry as a whole, the low point was in 1921, but, since that time, with the exception of a slight drop in 1924, there has been a continuously increasing total of profits, as shown by the above totals and by the following tabulation based on the analysis of the net income of twelve corporations producing automobile and auto accessories as listed in *Moody's* and the *Commercial and Financial Chronicle* (See Table II-A):

Year	Profits (in Thousands of Dollars)	Percentage of 1923 Income
1927	\$272,040	230%
1926	215,544	182
1925	164,378	139
1924	77,511	65
1923	118,456	100

Despite the fact, however, that the total profits have been increasing, the profits of all companies on which figures have been secured, exclusive of General Motors, have been decreasing each year since 1925, leaving all the increase to General Motors. That the trend as between General Motors and its competitors is not limited to profits, but includes sales volume as well, is shown by the following tabulation in thousands of dollars based on the returns reviewed on the N.A.C.A. questionnaire:

Year	SALES VOLUME (000's omitted)			Per Cent of Total	
	Total General Motors and 7 Others	General Motors (19th Annual Report of Corporation)	7 Other Companies (N.A.C.A. Questionnaire)	General Motors	7 Others
1927	\$1,841,972	\$1,269,519	\$572,453	69%	31%
1926	1,690,044	1,058,153	631,891	63	37
1925	1,390,598	734,592	656,006	53	47
1924	1,073,523	568,007	505,516	53	47

### MACHINERY

There were twenty companies engaged in machinery manufacturing who contributed replies to the questionnaire. The aggregate of these twenty shows a slight recession in profits in 1927 as compared with 1926, but 24% increase over 1923. The percentage of profits to sales, however, was 12.4 in 1923 and 11.1 in 1927 (See Tables I-A, B, and C.)

Year	Per Cent Profits to Sales	Per Cent of 1923	
		Profits	Sales
1927	11.1%	124%	139%
1926	11.8	130	137
1925	9.5	97	127
1924	8.1	68	104
1923	12.4	100	100

Judging from the replies to the questionnaire, the small machinery manufacturer has as great, if not greater, opportunity for profit as the larger corporation. The eighteen small concerns reported aggregated profits in 1927 which were 221% larger than the profits of 1923, and the percentage of profits to sales for these eighteen concerns was 11.7 as compared with 11.1 for the entire twenty companies.

The profit data tabulated from *Moody's Reports* (See Table II-A) show a decrease in 1927 as compared with 1926 but still 19% over 1923. Two corporations listed as manufacturing farm machinery show profits in 1927 which were nearly four times those of 1923, but it is probable that in this particular line 1923 was not a representative year, owing to the fact that the farming industry was suffering greater depression than were users of other types of machinery. However, the Standard Statistics Service in their bulletin of December 9, 1927, says, "The Agricultural implement industry is now classified among the most prosperous trades in the country."

Considering the fact that industry as a whole is prosperous and that there is a continual need for replacing worn-out or obsolete machinery, together with a constant pressure for lower production costs in all manufacturing lines, which results in a demand for new and more efficient machinery, there can hardly be any doubt that the outlook for the machinery industry as a whole is exceedingly bright. Undoubtedly, however, the following comment accompanying one of the questionnaires will apply to many establishments:

It is our opinion that every business should reorganize on the basis of 1925 as being a prosperous year. The tendency is for most manufacturers to hold on to their organization which was developed during the war and the years following. Most companies are still carrying too big overhead expenses for the amount of their sale. *It is our opinion that it is better to make a profit on the small sales than to make no profit on the large sales.*

## HEATING AND PLUMBING EQUIPMENT

According to the replies to the N.A.C.A. questionnaire the profits of 15 of the smaller companies were 27% greater in 1927 than in 1923. The percentage of net profits to net sales was 10.3% in

1927—the highest of any of the five years covered by the questionnaire. (See Tables I-A, B, and C.)

Year	Percentage Net Income to Net Sales	Percentage of 1923	
		Net Income	Sales
1927	10.3%	127%	122%
1926	8.3	99	118
1925	9.5	109	114
1924	9.6	102	105
1923	9.9	100	100

However, all concerns engaged in the manufacture of heating and plumbing equipment were not equally successful. Two companies listed in *Moody's Manual* (Table II-A) showed only 87% as large profits in 1927 as in 1923. Both of these were large companies having profits of over \$1,000,000 per year.

The profits of 10 manufacturers in this industry, according to figures published by the National City Bank (See Table III-A), showed slightly lower profits in 1927 than in either 1926 or 1925. These data, therefore, do not agree with the replies to the N.A.C.A. questionnaire, which show greater profits in 1927 than in either of the two immediately preceding years.

A number of expressions were received from manufacturers of plumbing and heating supplies. One manufacturer of boilers writes:

Keener competition is the main reason, this being brought about by the larger companies or combines who at the present time are quoting ridiculously low figures. . . . In order to get a volume of business big enough to take care of factory overhead, prices are being slashed right and left and undoubtedly the main object is to eliminate competition, so that the larger combines will have a clear field and they are spending their money from surplus in this manner. . . . At the beginning of 1928 the leaders in our industry issued a letter along with their new price list stating that they had changed their price and the revision was upwards on boilers with the main thought of stabilizing the industry. But we find that they are among the worst offenders in price slashing. Therefore what to my mind we need in business and especially among the leaders is honesty.

A stove manufacturer says:

The stove industry generally is in a very demoralized condition, due to overproduction which results in price-cutting. We are endeavoring to overcome this condition by specializing on a few popular models which

we can produce on a quantity basis and equip our plant with machinery to insure economical production.

The following paragraph is from a manufacturer of plumbing and heating supplies:

Speaking from the standpoint of the wholesaler, we believe that an accurate knowledge of costs; reliable accounting information relative to turnover, overhead expenses, profits, etc.; a careful analysis of inventory; a close study of the market; and a very definite knowledge of the requirements of the territory particularly with regard to old buildings which should be modernized by the addition of up-to-date sanitary equipment, are all matters of vital interest.

### TOOLS AND HARDWARE

The manufacturers of tools and hardware seem to be slowly recovering from a severe depression in 1924, if the 13 replies to the N.A.C.A. questionnaire may be considered as representative of the industry. (Tables I-A, B, and C.)

Year	Per Cent Net Income to Net Sales	Per Cent of 1923	
		Income	Sales
1927	11.6%	90%	106%
1926	10.2	87	118
1925	9.1	66	100
1924	6.8	44	89
1923	13.8	100	100

In an address delivered February 17, 1928, Charles J. Graham, President of the Bolt, Nut & Rivet Manufacturers' Association, says:

The bolt, nut, and rivet industry which I represent, had its baptism of fire in 1924 when its losses were running into such figures that practically the entire industry was facing complete annihilation. This caused the best brains in our industry to combine in an effort to bring about a "right about face," and study its individual problems as an industry, and it has accomplished rather remarkable results.

From an industry loss of twelve million dollars in 1924, we have by consistent coöperative effort in every way possible, converted this loss into a profit of approximately six millions of dollars per year in 1925, 1926, and 1927; a change of eighteen millions of dollars per annum on an invested capital of about one-hundred-and-fifty millions of dollars.

Six million dollars profit on such an investment is not sufficient, but

it is a move in the right direction, and, by further effort along constructive lines, we hope to bring about a condition whereby we will finally make a return consistent with manufacturing necessity and be able to make not only a fair return for our stockholders, but a return sufficient to enable us to keep abreast of the times in modernization of equipment. . . .

We have made a complete scientific study of the reasons behind such a condition (as existed in this industry in 1924.) We found that the greatest underlying evil we were up against was the evil that is sapping the life out of practically all competitive lines of American industry to-day, and that evil is selfishness.

We found that we were conducting our individual companies on a basis that had lost all semblance of decency or fairness—fairness to ourselves, our competitors, our customers, or the world at large.

E. F. DuBrul, General Manager of the National Machine Tool Builders' Association, Cincinnati, Ohio, contributes the following:

. . . We have with us the manager who thinks he can fill up his plant at the expense of competitors—who turn out to be just as smart as he is, and just as able to make a low price as he is, and of course just as unable to make a profit for that reason. . . . The remedy is better education of management in fundamental business principles.

A manufacturer of tools says:

In commenting on the situation, it is the writer's opinion that the law of diminished returns is especially active to-day by reason of the fact that practically all industry has expanded its productive output through higher manufacturing efficiencies, and this expansion is placing more goods available for the market than the market is able to absorb under normal sales effort.

In order to influence the sale of goods beyond the normal demand almost every industry is compelled, in the face of present competitive conditions, to increase their publicity appropriations, add to their selling force, make more frequent calls, offer greater service inducements, special price arrangements, special terms of payment, special allowances, etc., all of which more than offset the increased margin of profit made possible by economies effected in the manufacture of goods. . . .

The remedy is perhaps found in getting business volume sufficient to keep factories going at maximum output, and by reducing the cost of marketing merchandise. This has been accomplished to some extent by merging certain competitive interests in order to concentrate sales effort and effect such economies of management made possible by more adequate control.

One large manufacturer says that close attention to cost data assists in making profits:

. . . We have no reason to complain on account of our net income. One of the main reasons we have for this profit trend is close application to cost prices, and endeavoring to keep them as low as possible without sacrificing any of the quality of our tools.

Another manufacturer expresses himself as follows:

1. This is a highly competitive industry due to two main reasons, namely, overcapacity and lack of knowledge of actual costs, the latter being largely responsible for a steadily decreasing scale of selling prices.

2. Small orders occasioned by the so-called "Hand to Mouth Buying" with quick deliveries required which necessitates processing of small quantities, use of special equipment, unusual operations, and excessive spoilage.

3. Overcapacity, the cost of idleness offsetting to a great extent the profit made on operated facilities.

4. Increasing commercial cost of handling a larger volume of business in which the sales expense has about tripled, it being necessary now to go out after business which used to come without asking.

Possible remedies are:

1. Work through association to arrive at a sound uniform cost system whereby members may know their costs and make real practical use of them. There is now such an association in this industry but from a cost standpoint very little has been accomplished.

2. Having established our costs, take business on a basis that will permit a legitimate profit, even on a smaller volume if necessary.

### MISCELLANEOUS METAL PRODUCTS

Fifty-three completed questionnaires were received from manufacturers of miscellaneous varieties of metal products, principally castings, sheet metal products, stampings, etc. The aggregate net income shows a falling off in 1927 as compared with 1926, but is still slightly above the 1923 level:

Year	Per Cent Net Income to Sales	Per Cent of 1923	
		Net Income	Sales
1927	9.8%	102%	106%
1926	10.6	117	112
1925	9.6	96	103
1924	9.0	80	91
1923	10.2	100	100

The aggregate profits of the smaller concerns reporting, 45 in number, show a decided drop in 1927 as compared with 1926. (See

Tables I-D, E, and F.) The figures for these 45 small concerns are as follows:

Year	Per Cent Net Income to Net Sales	Per Cent of 1923	
		Net Income	Sales
1927	6.1%	79%	106%
1926	7.3	99	111
1925	7.5	96	104
1924	6.7	77	94
1923	8.1	100	100

From the above figures it will be seen that while sales were up to the average in volume, yet these smaller concerns were unable to make their share of the profits. The answer undoubtedly is that in the fact of lowering price levels, the small producers have not been able to keep pace with their larger competitors in cutting their manufacturing costs and overhead expenses. Following are three quotations from three different manufacturers which bear out this point of view:

It behooves any manufacturer who hopes to survive to watch his cost of production and install such new and improved machinery and methods to give him the lowest cost of production possible. You cannot starve the cow and expect it to give milk.

. . . It is becoming more difficult to hold old customers, due to competitive prices, unfair adjustments, and we believe ignorance or indifference as to actual costs.

. . . For the brass industry there has been a downward trend of profits during the past year. One of the dominant companies in the brass industry had a profit of \$2,800,000 in 1926 and about \$2,000,000 in 1927. The sales of the American Brass Company which is the leading factor in the industry were about 10% less in 1927 than in 1926. . . . There is no doubt that we are in the throes of very drastic competition, much of which is due to ignorance of costs.

An expression from a manufacturer of sheet steel is given below:

During the world war and the years immediately succeeding it, the demand usually exceeded the supply and prices continued to rise, with the result that there was a decided expansion of plants and facilities. During the years following the period just mentioned the demand for material subsided, competition became keener, and the sheet steel business drifted into a "buyers' market." The makers of sheet steel soon found that the buyer of large or desirable tonnages was always able to shade and

often demoralize established prices. Along with this condition sheet steel was more and more put to new and varied uses which required a superior quality, with the result that material which five years ago found a ready market would now be so inferior that it could hardly be disposed of except at almost scrap prices.

This keen competition and exacting requirements in the industry have given a great impetus for improvements in manufacturing methods in an industry which for a period of 20 or 30 years has made little headway in improving its practice.

The remedy . . . is beginning to assert itself. Groups of companies are already working together in advertising campaigns to increase further the consumption of sheet steel for new uses and the recovery of trade lost to other industries such as composition roofing, etc. Improvements are being developed in the heating, rolling, and finishing of sheet steel. Continuous mills are gradually replacing the old methods, especially in the heavier gauges.

And finally, as it becomes exceedingly difficult to meet the severe competition for business and the resulting low prices, mergers are being effected and others are discussed until eventually the industry will probably be in the hands of a few large companies who will be in a position to regulate production to demand and thus in some measure do away with destructive competition and place the industry on a basis which will show a fair margin to all concerned.

Another manufacturer expresses the sound opinion that production should be related to the ability to sell at a profit. He says:

There appears to be in this country the ability to make more than can be consumed. Every manufacturer will be better off to sell at a profit in proportion to the demand rather than to try to sell according to his production capacity at prices that are sometimes too low to produce a profit.

I consider the present situation to be one in which the manufacturer should carefully watch the quality of his product, the turnover of his inventory, the speed of his manufacture, the amount of his overhead, and above all he should determine the minimum at which he can profitably sell his goods and under no circumstances cut his prices below that minimum.

We feel that among manufacturers particularly, there is a wild scramble for business irrespective of the total volume of business to be obtained. If it were possible for each manufacturer to know promptly the total volume of business placed in the United States in his particular line, it would have a great effect in strengthening the backbone of those manufacturers who feel they are losing out to a competitor because they are not getting the same volume of business they obtained during the previous period, whereas, as a matter of fact, the total volume has been decreased. . . . The sooner the Sherman Anti-Trust Law is revised so

as to make it possible for associations of manufacturers to obtain legally information for the good of the industry, the sooner one of the causes of the variation in business will be eliminated.

The following contribution is from a manufacturer who believes in the theory that profits are necessary to the existence of a business:

. . . The cause of the shrinkage in profits . . . is the tremendous expansion during the war and immediately thereafter, so that when the country settled down to a condition of normalcy the problem developed among manufacturers as to how to keep their plants running full, and it appears that most of them have disregarded the fundamental principles of business and ignored entirely their costs, taking business at whatever price was offered. . . .

We attribute this (our profits remaining fairly uniform) to the fact that we have religiously clung to the old-fashioned theory that a business must have a profit to exist, and we have refused to accept business that did not show us a fair return. If all manufacturers would follow a similar practice, they might have a bit less business, but many of them would operate at a small profit rather than a loss.

Relative to the manufacture of railroad equipment, the Standard Statistics Service says:

Undoubtedly one of the most important factors in reducing demand for equipment has been the increase in railroad efficiency. This includes closer coöperation among railroads and shippers, regional distribution of cars, increased load per car, reduced demurrage, greater train loads, and higher speed of freight trains. All of these have enabled the roads to get more use than ever out of cars and engines, leaving a surplus of equipment even in busiest seasons. Besides, the motor truck, by cutting into short-haul business, has released cars for long-haul service; and replacement of the wooden car by the steel car has greatly increased the life of equipment.

A manufacturer of railroad equipment expresses the following opinion:

. . . There are too many manufacturing plants in the United States today. No doubt this was brought about by the war and the fact that our export trade has been seriously affected.

In our particular business there is another reason for the steadily narrowing margin of profit even in spite of increased sales. Four or five years ago the railroads started on a determined program to increase efficiency, the result being that today with better locomotives and freight cars, to say nothing of roadway improvement, the railroads have been able to increase the ton per mile haul per day to a very high figure. I am informed that this one item alone has cut down the purchase of freight

cars approximately 100,000 cars per year. More powerful and up-to-date locomotives have taken the place of obsolete types and this has had the effect of cutting down the purchase of new locomotives.

Another important factor is this—Years ago some of the railroads were not in financial condition to repair their equipment as they are doing today, the result being that new financing was done for new equipment. Today the railroads spend large sums of money in repairing old equipment. Of course, this has affected the railroad equipment manufacturers.

The following forecast for the steel and iron industry was published by the Standard Statistics Service in their bulletin of March 2, 1928:

Recovery in the steel industry is making moderate progress. Production rose sharply in January, gained slightly last month and should improve further in March. The seasonal recession normally expected in the second quarter will probably be much smaller than usual, resulting in an output for the entire first half of 1928 well in excess of that recorded in 1927. While there is doubtless a moderate amount of advance ordering, the larger output reflects actual consumption in large measure. Heavier steel requirements than a year ago are reported in practically all major lines.

With prices still about 10% under those obtained in the first quarter of 1927, it is doubtful that even with a larger aggregate output earnings of most companies will compare favorably with those of the same period last year, although there will be a sharp increase as compared with the incomes reported in the last quarter of 1927. The full benefit of recent and prospective price advances will, however, be reflected in second quarter income accounts. Moreover, although prices may also average under last year's in the second quarter, production will be heavier than a year ago and favorable earnings comparisons should be possible for most companies.

### MISCELLANEOUS MANUFACTURING

The twelve questionnaires listed under this heading embrace almost as many different lines of business. (See Tables I-A, B, and C.) These can hardly be looked upon as representative of all industries not elsewhere classified, but the following figures show the trend of their profits:

Year	Per Cent Net Income to Net Sales	Per Cent of 1923	
		Income	Sales
1927	12.0%	108%	130%
1926	14.1	119	121
1925	14.2	119	120
1924	13.9	109	112
1923	14.3	100	100

An increasing volume of sales is indicated but with a narrower margin of profit in 1927 as compared with previous years.

A manufacturer of pianos says:

You will note that in 1927 our net income was seriously affected, and this was almost entirely due to the great increase in cost of distribution, the competition of other merchandise having a great deal to do with it.

The following is from a show case manufacturer :

. . . We have a few larger competitors whose main occupation seems to be price-cutting and the adoption of certain undesirable policies which in our opinion is largely the result of inadequate information regarding their own business and the industry as a whole.

There have been three or four important consolidations in the industry within the last three years and we believe that further consolidations in the near future are inevitable. Consolidations of the right companies together with the possible elimination of some of the small competitors through their inability to continue to operate under present-day conditions will ultimately improve the general situation.

Relative to the radio and piano industries, the Standard Statistics bulletin of February 24, 1928, contains the following forecast :

The radio industry, broadly considered, is weakly situated at present, and gives little promise of greatly improving its position during the near term. Except for a brief recovery during December, sales have been of curtailed volume since the middle of last October, largely because of consumer dissatisfaction with many of the so-called battery-less and AC receivers introduced in recent months. Demand for DC sets and accessories has been especially backward, with the result that prices on this type of equipment have declined substantially.

With the season of the year now at hand when radio business normally follows a definitely downward course, the chances appear small for an early important trade expansion. . . .

Although actual sales data are not available, recent widespread price-cutting indicates that business in the piano industry, and especially in the player-piano branch, is unsatisfactory. Further evidence in support of this conclusion is the fact that one of the leading producers has recently found it necessary to omit common dividend payments, and that receivers have been appointed for another prominent concern.

Following is a forecast for the office and business equipment industry, from the same source :

Aggregate net earnings of leading office and business equipment manufacturers were approximately 4% larger in 1927 than in the preced-

ing year, when profits were, in turn, nearly 12% greater than in 1925. In the cases of individual companies, gains running as high as 30% were recorded last year. Failure of the second half year to sustain the 8% average increase registered in the initial six months was due to a reduced volume of domestic sales, occasioned by the decline in the rate of general business activity in this country. Export trade was exceptionally active throughout the entire period.

With export demand promising to continue of heavy volume, and with larger domestic sales likely to result from reviving general business activity in the United States, earnings of most of the principal office and business equipment producers should be fully as satisfactory in the first half of 1928 as in the corresponding 1927 period. In fact, several concerns probably will report fairly substantial increases. The industry's longer-term prospect is for a further sales and earnings expansion.

## CHAPTER V

### PUBLIC UTILITIES

THE N.A.C.A. questionnaire brought no replies from public utilities. It is, however, a well-known fact that public utilities earnings have been on the up-grade for the past five years. This trend is clearly shown by the tabulations of profits of 89 companies as published in *Moody's Manual*, summarized below on the basis of percentages of 1923 profits. (See also Table II-A.)

1927 .....	158%
1926 .....	157
1925 .....	135
1924 .....	117
1923 .....	100

The slight decline in 1927 as compared with 1926 was entirely because of a decline in railroad earnings from the peak of 1926.

#### Rail Transportation

Profits of 23 railroads as listed in *Moody's Manual* were tabulated and show the following:

Year	Per cent of 1923
1927 .....	134%
1926 .....	156
1925 .....	131
1924 .....	101
1923 .....	100

The Standard Statistics Service analyzes the railroad situation thus:

Freight traffic suffered in the last three-quarters of 1927 not only by reason of the bituminous coal strike, but also from the decline in business activity which became particularly apparent in the final quarter. This year, the picture is changed. Coal traffic ought to be more normal, and

with business in the major industries on a relatively high plane, it is our opinion that the volume of freight traffic for the last three-quarters of 1928 will hold continuously above that of the same period last year. . . . But, while total earnings for 1928 were practically certain to run ahead of 1927, it is hardly likely that the peak results of 1926 will be duplicated. As a rough guess, 1928 net operating income of Class I roads should fall about midway between that of 1926 and 1927.

## Water Transportation

Although the four steamship companies whose profits were summarized in Table II-A show considerably greater aggregate profits in 1927 than in 1926, yet the industry as a whole did not make satisfactory earnings.

The outlook for the industry is summarized by the Standard Statistics Bulletin of March 23, 1928, as follows:

With the exception of the West Indies time charter trade, which is receiving a comparatively heavy volume of business, the ocean freight market is still unsatisfactorily situated. Reflecting a supply of tonnage which is substantially in excess of requirements, rates remain weak at levels which return little or no profit for most shipowners. Ships operating under American registry are finding conditions especially difficult, since operating costs of these vessels are in most instances well above those of foreign ships.

The prospect is for freer demands for April tonnage in general trades, which, if supported by a continued active West Indies business, probably will find reflection before long in a stiffer rate structure. However, competition is so keen because of the oversupply of tonnage that anything more than a very moderate rate increase during the early future appears distinctly improbable. Hence it is likely that earnings of most companies for the first half of 1928 will make another poor showing, although improved results (as compared with the initial 6 months of 1927) probably will be reported by concerns which are engaged primarily in the West Indies trade.

Current evidence indicates that not until definite action is taken to place the American merchant marine on a competitive basis with foreign tonnage will it be able to avoid operating losses. It appears inevitable that sooner or later Government relief will be forthcoming, but precisely when it will arrive and how extensive it will be are questions to which only the future can provide the answer.

The American shipbuilding industry likewise is in dire need of Government aid, and doubtless will remain seriously depressed until the necessary assistance is received. Volume of merchant ship tonnage under construction in the United States at the beginning of 1928 was 36 per cent smaller than a year earlier, notwithstanding the fact that total world tonnage registered a 62.5 per cent gain. In consequence, both production and

earnings of the majority of domestic shipyards are sharply curtailed, and give little promise of showing an early marked expansion.

### Local Transportation

The aggregate profits of 13 traction and street railway companies tabulated from data published by the *Financial and Commercial Chronicle* and *Moody's* show an upward trend of profits:

Year	Per cent of 1923
1927 .....	134%
1926 .....	121
1925 .....	112
1924 .....	95
1923 .....	100

However, the increase in profits of traction companies is not uniform. In 1927, 5 of the 13 companies showed decreases in net income. The following summary was published by the Standard Statistical Service on March 30, 1928:

The difficulties of the traction companies were not on the whole greatly ameliorated during the past year. Important fare increases were obtained by several prominent companies, and others are pending, but these advances have not in all cases directly increased operating revenues. Higher fares not only restrict traffic volume, but also in nearly every case necessitate wage increases. The weak credit standing of most companies has precluded necessary long-term financing, thus curtailing working capital and limiting physical improvements and extensions. Political controversies continue to cloud the outlook in many cities, and relief by legislation has been secured in only a few instances.

Nevertheless, prospects for 1928 appear to have brightened somewhat. Improving business conditions in the larger industrial centers is currently stimulating traction traffic. Municipal and state regulatory bodies are in most cases co-operating with operating concerns in the working out of comprehensive programs designed both to improve traction service and to rehabilitate earnings. However, no large gain in earnings can be looked for by most companies this year. In New York City, the situation is so complicated because of litigation and political considerations that any definite forecast of probable near-term developments is impracticable.

### Electric Light, Power, and Gas Companies

Income data for 35 electric light, power, and gas companies were obtained from the *Commercial and Financial Chronicle* and

*Moody's Manual.* The total profits of these 35 companies climbed continuously during the past five years, and in 1927 were double the profits of 1923.

Year	Per cent of 1923
1927 .....	200 $\frac{1}{2}$ %
1926 .....	171
1925 .....	141
1924 .....	115
1923 .....	100

The following forecast is quoted from the Standard Statistical bulletin of April 13, 1928:

Expansion in the electric light and power industry during 1927 was at a slightly slower rate than in recent previous years owing to industrial irregularities, but judging by the trend of the past three months an excellent increase will be recorded in 1928. In contrast with the 8% gain registered in 1927, electric power output will probably show a 10 to 12% gain this year. Industrial expansion, application of electricity to new industrial and household uses, new customers created by building activity, and reductions in charges by numerous large companies are among the more important factors in the current improvement. Operating costs are not increasing in proportion to the gains in aggregate power output, thus enabling most companies to show proportionately large gains in net earnings.

Unseasonable weather conditions and industrial irregularities also prevented a normal increase in gas consumption last year, but there have been exceptional increases in industrial demand in recent months and an excellent gain is anticipated in this utility field for the year as a whole. As with the electric companies, new types of production equipment are resulting in lower costs and demand is being stimulated by rate reductions. Gas and electric companies, as a whole, should, therefore, report near-term gains in gross and net revenues comparing favorably with the best of recent years.

### Telephone and Telegraph

There has been a continuous expansion in the earnings of telephone and telegraph companies during the five-year period 1923-1927. The profits of 14 companies shown in Table II-A are probably

typical of the upward trend of profits. The percentages of profit using 1923 earnings as a base are given below:

Year	Per cent of 1923
1927 .....	170%
1926 .....	155
1925 .....	140
1924 .....	113
1923 .....	100

According to the Standard Statistics Service, operating income of the leading companies in 1927 was 11% greater than in 1926, and the outlook for 1928 is for an increase over 1927.

## CHAPTER VI

### MISCELLANEOUS

#### AGRICULTURE AND RELATED INDUSTRIES

**I**T is a matter of common knowledge that the period of 1920-1923 represented the low point in agriculture, and that from that time there has been a gradual recovery. The unfavorable factor with which the farmer has had to contend has been the decreased buying power of his products. Although the prices of farm products fell greatly from the peak levels, their decline as compared with that of everything the farmer bought was even greater.

This decline in purchasing power is shown by the table on page 410, prepared by the Department of Agriculture. The period from August 1909 to July 1914, inclusive, is used as the basis for 100%. It will be noted that in 1927, while the index of farm prices was 131% of that in 1909-1914, the buying power was only 86% of 1909-1914. The situation was worse in 1923, when the actual prices were high—135%—but the purchasing power was lower—79%. The low point was in 1921 when the price index was 116 and the buying power only 69%.

In 1927 and so far in 1928, there has been a continued recovery in agriculture, as represented by higher prices for farm products and a general improvement in agricultural prosperity, but land values are still in a depressed condition. The following quotation from the Brookmire Farm Income Bulletin of December 15, 1927, summarizes the situation:

The position of the farmers has undoubtedly improved in the last five or six years. Income has increased; frozen credits have been to a considerable extent liquidated; but land values have not started to rise. . . . A new and higher margin of cultivation has appeared, mainly as the result of competition from other surplus-producing countries. That is, land which formerly was worth cultivation will not now pay its way. . . . The value of the dollar has increased considerably since the capital structure of much of the agricultural industry was erected, namely, around 1919-1920. . . . Agriculture is a heavily capitalized industry; that is, current

income is small in proportion to the capital invested. At the same time, farm income fluctuates violently from year to year. It is an axiom of finance that only industries of stable income can carry heavy fixed charges. Agriculture, however, has always carried a relatively heavy mortgage indebtedness. Few other industries, outside of public utilities and railroad transportation, have so much of their capital in the form of funded debt, on which a fixed interest must be paid. The only reason that farmers

INDEX OF BUYING POWER OF FARM  
PRODUCTS IN TERMS OF NON-AGRICUL-  
TURAL COMMODITIES

Relative: August 1909-July 1914=100%

Year	Buying Power	Index of Farm Prices
1927	86	131
1926	80	136
1925	89	147
1924	83	134
1923	79	135
1922	74	124
1921	69	116
1920	85	205
1919	105	209
1918	107	200
1917	97	176
1916	85	117
1915	99	100
1914	105	102
1913	95	100
1912	99	99
1911	99	95
1910	101	103

were ever able to carry such a heavy burden of fixed charges was that in pre-war times the trend of land values was generally upward; hence the owner's equity in the property increased from year to year. This was cashed in when the property changed hands. His income was also on the upward trend, so that the burden of the interest charge became relatively less as time passed. Since the abrupt collapse of land values following the war, the price of land has been stable or slowly declining. . . . It now appears that it will be many years before a general and pronounced upward trend of land values can be renewed. . . . The fact is that quite a few mortgages are now greater than actual value of the property.

Since agriculture is rarely conducted under the corporate form of organization, there are no available statistics from the usual

sources, and this important basic industry is not covered by specific data in this survey except those given above as regards farm prices, which in themselves form a good picture of the trend of agricultural profits, which may be said to be definitely upward, albeit the progress is slow, and final recovery is dependent upon the progress of recapitalization of land values.

Statistics are, however, available on certain of the related industries, such as farm machinery and equipment, milk, cheese, butter and egg production, grain and produce marketing, etc., which show a close correlation in profits with the general agricultural prosperity or lack of prosperity. For industries classified under the head of "Agriculture and Related Industries" in the Income Tax Reports, over 50% of the returns for every year from 1921 to 1925, inclusive, showed a deficit, although the proportion of reports showing a profit increased greatly in 1924 and 1925. (See Tables IV-B, and C.) Only one year, 1921, showed a net deficit, but the other years, except 1923, showed little more than an "even break" for all industries in this class. The year 1923 was a fairly good year for agriculture—at least when compared with the two preceding years—and a good profit was shown for that year. This profit doubtless resulted more from the actual necessity of the farming population to spend something for current maintenance and replacement after two years of cessation of expenditure than from the actual recovery in agricultural prosperity. The year 1925 was the next best year in the Income Tax reports, and it is reasonable to assume that when the 1926 and 1927 figures are available, they will show a continuation of this trend.

Although Income Tax reports for these last two years are not available, the National City Bank bulletin for April, 1928 (Table III-A) has given the following data as to the comparative profits of 10 agricultural implement companies for the years 1925-1927, inclusive.

1927 .....	\$44,664,000
1926 .....	43,583,000
1925 .....	35,249,000

We may, therefore, feel justified in the conclusion that there has been a definite upward trend in the profits of agriculture and related industries, that this trend will doubtless continue on a gradually upward curve for a considerable period of years, but

that it will be a considerable time in the future before this basic industry and its related activities are on a prewar footing as regards profitableness of operation.

### AMUSEMENTS

The only readily available data on the amusement field are those given in the National City Bank study printed in its April, 1928, Bulletin. (See Table III-A.) This study shows the following profits for 14 companies for the three years 1925-1927, inclusive:

Year	Profits	Per Cent with 1925 as Base
1927	\$39,777,000	182%
1926	38,731,000	176
1925	21,862,000	100

The most outstanding branch of the amusement field is the motion picture industry, which at the present time is passing through a period of expansion and both vertical and horizontal integration. The motion picture producing companies which have been enjoying good earnings but which had small investments in fixed assets are now making large investments in real estate holdings. The profits from the films produced fluctuate greatly, depending upon whether a certain film is a "hit" with the public, while the income from theaters showing moving pictures is more stable. The stability of the profits from the operation of moving picture theaters is further augmented by the policy of including stores and office space in the theater buildings. The Standard Statistics Service reports that the net income of the eight leading companies to date for 1928 shows an increase for 1928 of 14.4% over 1927, thus indicating a continuation of the upward trend in profits.

In the vaudeville field, there has been a recent consolidation of the two leading circuits, Keith-Albee and Orpheum, which is expected to eliminate many duplications of effort in booking, advertising, etc., and therefore, to result in an increase in profits for the interests involved.

### CONSTRUCTION

There were only two replies received to the N.A.C.A. questionnaire in the construction and building industry, and, in order to

conceal the identity of these two concerns, their reports were combined with five reports in various lines of "trade." These returns, because so few in number, cannot be considered as representative of conditions in either the "construction" or "trade" industries.

The statistics based upon income tax returns (Table IV-C) show a continuous increase in profits of corporations engaged in construction from 1921 to 1925.

Year	Percentages on Basis of 1923				
	Net Income	Deficit	All Profits	\$1,000,000 and Over	Under \$1,000,000
1925	163	101	140	111	144
1924	131	98	118	120	118
1923	100	100	100	100	100
1922	57	134	81	54	86
1921	23	120	60	101	54
1920	123	66	101	27	77

For the same period the percentage of net profits to total receipts was as follows (See Table IV-D) :

Year	Per Cent
1925 .....	4.64%
1924 .....	3.80
1923 .....	2.99
1922 .....	2.08
1921 .....	0.12
1920 .....	2.34

Relative to "Building and Related Lines," the Standard Statistics Service, in their bulletin of March 9, 1928, published the following forecast:

The building and engineering construction industries have begun operations in 1928 under rather auspicious circumstances. The mild let-down in certain types of building activity last year permitted restoration of more healthy building supply relationships in many large centers. Meanwhile, new needs have developed, and the continued credit ease is making possible renewed expansion throughout the industry. Substantial gains in contract awards and building permits as compared with the first two months of 1927 are indicative of an aggregate outlay in the current half year at least equal to previous high record totals.

The building materials industries are, in the main, overdeveloped

relative even to peak construction requirements. The moderate recession in building activity last year intensified competition among the materials producers, resulting in lower prices on numerous lines and in a marked curtailment of profit margins. Nevertheless, the expansion in demand indicated for at least the first six months of 1928 should reach a volume sufficient, in view of the strength in building materials prices now reported, to effect a substantial improvement in earnings. The position of the cement producers remains thoroughly unsatisfactory, however, and only limited improvement seems in prospect. Manufacturers of specialty building equipment made excellent showings for the most part last year in the face of some irregularity in sales and should experience further expansion in the near term.

### TRADE

Profit data of 20 corporations engaged in "Trade" was secured from the *Commercial and Financial Chronicle* and *Moody's Manual*. The aggregate profits of these 20 concerns show an upward trend each year after 1924. (See also Table II-A.)

Year	Percentages Basis 1923
1927 .....	143%
1926 .....	129
1925 .....	122
1924 .....	98
1923 .....	100

These corporations were all in the "large" class, having, individually, incomes of over \$1,000,000 in one or more of the five years.

The Statistics of Income (Table IV-C) show that "Trade" has had its ups-and-downs during the period from 1920-1925, with no definite trend for the period covered.

Year	Percentages on Basis of 1923				
	Net Income	Deficit	All Profits	\$1,000,000 and Over	Under \$1,000,000
1925	104%	109%	105%	118%	101%
1924	86	117	92	101	89
1923	100	100	100	100	100
1922	75	120	85	86	84
1921	Deficit	237	48	49	47
1920	61	128	76	70	78

The percentages of net income to total receipts were as follows (See also Table IV-D):

Year	Per Cent
1925 .....	2.26%
1924 .....	2.06
1923 .....	2.64
1922 .....	2.19
1921 .....	.55
1920 .....	1.20

Relative to the trend of profits in the retail drug business, Samuel C. Henry, Secretary of the National Association of Retail Druggists, states:

The percentage of profit upon gross sales is lower at the present time than it has been during the past five years. Seeking a cause for this condition, I feel that it may be found in the almost universal method of price-cutting on trade-marked and otherwise identified merchandise, back of which there is much national advertising, and I can see no remedy for this situation unless and until the Congress of the United States, through legislative enactment, restores the right of contract between the producer of identified brands of merchandise and his distributors. If and when this step is taken by our national lawmakers, I am quite convinced that conditions will improve in the retail drug field and the percentage of bankruptcies will decrease.

Some of the chain stores have likewise experienced narrowing profit margins, as indicated by the following tabulation published in *Chain Store Research Letter* of March 5, 1928.

MARGIN OF PROFIT OF CHAIN DRUG STORES

	1927	1926	1925	1924	1923
United Drug ....	7.00	8.31	8.55	8.98	7.69
People's Drug ..	...	6.90	8.10	7.00	...
Owl Drug .....	...	5.40	5.70	5.30	6.30
Walgreen Co. ...	...	7.70	7.70	8.30	6.10

The same publication discusses the chain drug store situation at some length:

At the present time there are in the neighborhood of 51,000 independent drug stores in this country, with but 3,155 chain drug stores,

or 6% of the total. When one compares the number of chain drug stores with 65,000 chain grocery stores, it will be readily seen that the surface has been barely scratched in the former case. Some 64% of these chain drug stores are located in cities of 100,000 or more and have an average weekly sale of \$2,000 or better.

It is evident, then, that chain drug stores are at present serving but a small percentage of the population of this country. As the science of successful merchandising in these stores becomes better developed it will be possible to locate more in "neighborhood sections" where yearly sales of \$50,000 per store are possible. The deeper one studies the criss-crossing of lines in the retail field today, the more uncertain one becomes regarding which types will finally survive. Will pure restaurants be driven from business because of the addition of restaurant departments in the drug and variety field? Will candy stores be supplanted by other stores selling a more general line of merchandise, or tobacco stores be pushed hard by competition from grocery, drug, and department store chains?

After studying many of these cross currents, we are convinced that the chain drug store will benefit greatly by these new changes and become an even more important factor in the general retail structure.

One can understand that it is a relatively easy matter to merchandise and manage chain grocery stores, since they average some \$800 per week and usually carry about 1,000 items. To expand in this field requires but a small amount of capital (usually \$3,000) whereas in the case of chain drug stores it requires from \$25,000 up for each unit. The average chain drug system carries from 8,000 to 9,000 items and there is no field in modern retailing which calls for a higher type of merchandising. There are probably not over a half-dozen executives capable of managing chain drug systems who could be obtained in the United States.

The National Wholesale Grocers' Association contributes the following:

Due to intense competition in both production and distribution, the actual profit trend in the wholesale grocery business as a whole has been downward during the past five years. Some outstanding firms, as a result of unusually efficient management and many years of preparation have been unusually successful during this period, but the industry as a whole has participated in the general movement in the direction of lower profits.

United Grocers, San Francisco, sums up the chain store situation in the grocery line:

Too much competition due to increased number of chain stores, later causing splitting up of average sales per store unit, hence increasing overhead. The ease with which chain store systems obtain money to expand is one of the direct causes. The middle classes, in our case independent grocers, are gradually driven out of existence and replaced with a number

of chain store clerks of decreased purchasing power. Wholesaler is gradually replaced by retailer-owned wholesale unit.

A dealer in ice and coal says:

In the coal retail business there never will be any great profits earned until all the dealers in the same city find out that each other dealer is not trying to put him out of business. The great trouble with the retail ice business is the keen competition among the dealers. Price cutting is the cause of the great reduction of net profits.

E. H. Quigley, Assistant to the President of the American Retail Jewelers' Association, writes that:

Specialty retail jewelry stores are at a disadvantage as compared with large capitalized firms which buy in quantity.

The cheapening of merchandise by substitution or imitations; the forced selling of new patterns, styles, and designs during dull periods, resulting in a growing obsolescence of otherwise normally moving items; the too free extension of credit, discounts, and terms; and a complete lack of coöperation between producing and distributing factors we believe have a very telling effect upon the consumer who is being educated to prefer merchandise on a price rather than a quality basis.

The sales and profits figures for Montgomery, Ward & Company, which may be considered typical of the large mail order houses, are given below:

Year	Net Profit	Sales
1927	\$15,119,000	\$186,683,000
1926	10,156,000	183,801,000
1925	12,908,000	170,592,000
1924	10,433,000	150,045,000
1923	7,703,000	123,702,000

The decline in net profits for 1926 is explained in their annual report in the following manner:

The explanation of the smaller net profit in spite of increased sales lies in the fact that 1926 was a year of declining commodity prices resulting in a recession in the margin of gross profit per dollar of sales. Moreover, there was a greater demand than usual for merchandise carrying a relatively lower margin of gross profit.

The greater profits resulting from operations in 1927 were due to "improved merchandising, together with economies in selling and operating expenses."

The Standard Statistics Service, in their bulletin of May 11, 1928, makes the following forecast for retail trade:

Inclement weather and general trade hesitancy in the early months of 1928 have been largely responsible for the failure of most types of retail merchandising organizations to show any marked sales increases as compared with a year ago. However, chain store sales have increased sharply, and further excellent gains are in prospect for practically all the seasoned concerns in this group. Mail order sales will doubtless compare more favorably with those of a year ago as soon as the agricultural outlook is somewhat more clearly defined. Improvement in general business and more seasonable weather conditions should be reflected in improved department and specialty store sales in the late spring and early summer. Profit margins are, on the whole, being well sustained so that larger sales volumes should result in proportionate gains in earnings.

## CHAPTER VII

### COMMENTS AND SUGGESTIONS

#### A. WHAT ARE THE REASONS FOR THE GENERAL ACCEPTANCE OF THE THEORY THAT PROFITS ARE DECLINING?

**A**S stated in Chapter II, the general trend in profits in the larger corporations appears to be upwards, although they are undoubtedly declining in many industries because of special circumstances in the industry. How, then, is this conclusion to be reconciled with the widely prevalent idea that profits are declining?

##### 1. Declining Margin of Profit Per Sales Unit in Many Industries

It would appear that much of the discussion as to the declining profits margin refers not to the total amount of profits earned but to the smaller margin of profit in each sales unit in many industries.

In analyzing some of the causes of smaller profit margins per unit of sales, even though total profits may not be diminished, Ray M. Hudson, Assistant Director, Commercial Standards, Bureau of Standards, Department of Commerce, lists, first, the rising cost of doing business, which is:

. . . due chiefly to the more intensive methods of selling, necessary under current conditions of keen competition, excess production capacity, and hand-to-mouth buying. However correct such diagnosis may be, there can be no escaping the fact that the larger the mass to be moved, the greater the effort required to move it. The greater the inertia, the greater the effort required to overcome it. This is a natural law which evidently is as fully applicable to the disposal of the output of our factories as it is to the displacement of a huge granite boulder.

We must expect, therefore, that as our factories increase in size and number, and their total output thus grows in volume, greater selling effort must be applied to the movement of that volume from shipping room to ultimate consumer. Naturally this greater effort involves greater cost. At present, this increase in cost of sales seems to be absorbing too great

a portion of the economies resulting from mass production, and for the time being, profit margins under a constant selling price are suffering. Also, as current economic conditions are evidently conducive to falling prices, it is likely profit margins will still further decrease unless methods can be found which when applied not only to production but also to distribution will further cut the costs of those two essential operations. That such methods will be found and applied is more than probable, for it is inconceivable that the same diligence, inventive genius, and executive capacity that have made American business profitable in the past, will be unable to do so again.

Already there is marked evidence of great advance in productive capacity of machines, and of individual output by men. Waste is being eliminated in every phase of business. Distribution costs are being most carefully scrutinized. Simplification, inventory control, market analysis, and other means of reducing manufacturing and selling costs are taking hold on business minds, and consequently costs are coming down. So long as costs can be reduced as fast as prices fall, profit margins will remain constant; but a larger volume, *i.e.*, greater number of units, must be sold per annum to yield the same net profit in dollars as was previously enjoyed under higher price levels.

The problem then becomes one of determining the consuming capacity and the purchasing power of the buying public in order to know whether or not that larger volume can be successfully and regularly absorbed.

## 2. Declining Rate of Return Per Unit of Investment in Some Industries

In addition to the declining margin of profit per sales unit, it is probable that there is a declining rate of return per unit of investment in some industries. The determination as to whether there has been an actual decline in the profits in relation to capital invested is a baffling problem, and no material has been presented on it in this study, except in certain individual industries, and in one investigation covering two years. (See Table VII.)

The difficulties in this connection are well summarized by Foster & Catchings in their book on "Profits," as follows:

As a base upon which to compute the rate of profit of a company, total investment, including surplus, should be used; but what is surplus? Sometimes it is nothing more than a bookkeeping transaction. Sometimes it stands for fictitious sums which have never been used in the business; sometimes for money that has been lost; sometimes for overvalued machinery or inventories. Whether the amount set down as surplus in the report of a particular company represents money that has been earned and put back into the business, or inflated capital values, or good-will, or something else, it is often impossible to tell.

The following editorial comment from the *Saturday Evening Post* of December 31, 1927, covers the matter of declining profits in relation to capital investment as follows:

Widespread use is being made of certain data in the Treasury reports for 1925, purporting to indicate that a large proportion of corporations in the United States are doing business without profit. Something like 41% of the reporting corporations were able to show no net earnings. Something like 25% of the corporations earned less than \$2,000 during the year; 12% earned more than \$2,000 and less than \$5,000; less than 7% of the corporations earned more than \$10,000. The number of corporations reporting earnings in excess of \$1,000,000 was about one-quarter of one per cent of the total, and their combined earnings represented nearly two-thirds of corporate income of the country. About 40% of companies manufacturing leather, rubber, and chemicals reported net losses for the year. Of agricultural units reporting to the Treasury, about 53% showed losses. The worst showing was made in mining and quarrying, where more than 70% of the reported corporations indicated losses.

Does this all mean what the bare figures might indicate? Nothing of the sort. Disregarding the necessary qualification that the accountings in the different lines are not comparable, it is misleading to judge corporation business on the basis of percentage of incorporated units instead of on the basis of capital invested and out-turn of goods. What proportions of capital invested in corporations reported net losses and net profits respectively for the year? What were the volumes of commodities produced by the corporations reporting profits and losses, respectively?

If the situation were really as black as depicted in the percentage figures, profit-insurance companies for corporations would be as necessary as life-insurance companies for human beings. If more comprehensive surveys and analyses of corporation business could be assembled, we are convinced that they would give an entirely different picture.

Ray M. Hudson, who has been previously quoted, writes as follows on this phase of the subject:

Is it not time to clarify our thinking on the profit question and to discuss it more with relation to its meaning in terms of "return on investment?"

The law has "fixed" the rate of return on investment for the railroads. Is it not possible that economic law is operating to readjust our preconceived ideas on what is fair return on industrial capital?

If capital investment increases in faster ratio than does gross income, the profit problem will become more acute, for it will mean smaller returns on investment. But is it not probable that present prosperity may in some measure be attributable to *actual* increase in return on investment even in the face of shrinking profit margins per unit of sale? Otherwise, how

may we account for the steady upward trend in the stock market, and for the "mad scramble" to get hold of promising shares? Surely, not all of this activity is due to a growing thirst for speculation? There must be real money in it in the form of returns superior to those from other types of investment. If this is the fact, and returns on investment are rising proportionately as prices for goods and commodities fall, and if profit margins per unit of sale are shrinking but enough more units are being sold, or can be sold, to increase gross sales beyond all previous records, why worry? Isn't this the combination business wants? Evidently it is, for business has a way of getting what it wants. Profits are its chief goal, and they will continue to be made in the future as in the past, but (as indicated by the slogan of one very successful manufacturing company) "better, quicker and cheaper" than heretofore. It may mean harder work for some—it may take greater managerial skill—but the profits will come just the same. American business isn't throwing up the sponge. It has just begun to fight, and it is going to be *some* fight! The premium on "brains," on managerial skill and intelligence will be greater than ever. The next five years offers no rich hope of reward for the "take-it-easy" type of executive. From now on, profits will be had by those who go after them!

### 3. Change in Ease of Securing Profits

J. H. Friedel, Vice President of the Doughnut Machine Corporation, 1170 Broadway, New York City, in commenting on the earnings of those with whom he has contact, writes with reference to the current comment on declining profits that while they "complain of lack of profits publicly none of them seem to be in want. The earnings actually are good. Many do not seem to have gotten over the period of easy profits of the war and post-war period. Too many have become soft. There is plenty of profitable business to be had for those who are willing to go out and get the business."

Professor T. H. Sanders, Professor of Accounting of the Harvard School of Business Administration, comments on this same universal discussion about declining profits as follows:

Even if there is no decline in the percentage of profit or in the amount, the feeling seems universal that profits are being made with more difficulty, and that it is necessary to handle labor, and to organize the industry more and more effectively, thus cutting down unit costs on labor and overhead.

Another factor which explains a great deal of the current comment on the decline of profits is the greater attention and application given to the so-called "volume theory" concerning which Julius Klein, Director of the Bureau of Foreign and Domestic

Trade of the Department of Commerce, makes the following succinct comments:

From the facts which come to our attention we cannot avoid the impression that in many industries more attention is given to the gross volume of business than to the net profits. Occasionally we hear people talk of profitless prosperity which is one of the indications of this. There is a growing feeling in many quarters that if everyone in business saw the folly of making sales below cost or of doing business at a loss, merely to add volume, many of the present difficulties which some trades are experiencing would vanish.

## B. SUGGESTED REMEDIES TO INCREASE PROFITS

### 1. Elimination of Waste

An important factor in building up profits is the elimination of waste, concerning which Charles E. Mitchell, President of the National City Bank of New York, states as follows in an address entitled "An Economic Ramble," given before the Industrial Club of Chicago on December 8, 1927:

We enjoy the greatest degree of prosperity and reach the highest standard of living when the greatest volume of things are being produced and the greatest volume of things are being consumed, and when production and consumption are in balance. These constitute a two-horse team, and it is the slow horse and not the fast one that sets the pace. In the past decade our intelligence and our resources have been most definitely applied in improving the methods of production and in increasing its potential volume. I do not go so far as to say that we have reached the apex of efficiency in this regard, but we have at least reached a point of efficiency which is far and away greater than ever known before in the world's history.

So much for production, the fast horse. But what of consumption? Installment buying, the convenience and efficiency of chain stores, mail order houses and department stores have given it stimulation, but it is still the lagging horse. If the dollar earned by the producer would consume more of goods, the price of the goods must be lowered, and considering the low profits currently reported, not only by producers but by those many agencies entering into the distribution and merchandising of goods, it would appear that there is little room for further reduction of price to the consumer. The answer, then, must lie in the elimination of waste processes that exist between production and consumption to the end that this elimination may reflect itself in lower prices. I cannot but believe that if the same degree of high intelligence that has been exerted in perfecting our productive processes is persistently applied in the next few years to the problem of distribution and merchandising, the amount

of waste will be determined and the means found for elimination thereof.

I have heard it said that a third of Henry Ford's vast profits during recent years have come from what in his organization is known as "freight savings," meaning the difference between the cost of a car sold F.O.B. Detroit and delivered as an assembled product and the cost of shipment of parts from the Detroit factory to an assembling plant at the point of consumption where the parts can there be assembled and a completed car delivered to the customer at the normal F.O.B. Detroit price. It is this character of waste elimination which, if permitted to flow into the consumer's price, will obviously permit the consumer to purchase and consume goods in larger volume. I do not pretend to say where and in what way similar waste elimination can be made, but I have confidence that American initiative exerted under the pressure that is now existent will find in one way or another in this and that line of business endeavor the answer to this perplexing question. Of this I am satisfied, that in the process there must be a trend toward the larger business unit. For example, let me cite the timber industry. Say that there are a half-dozen independent operators in a section of the Northwest covering a natural market within a circle of five-hundred miles, who, acting independently and with duplicated sales forces maintained at great expense, competing one with another, their shipments criss-crossing and passing each other's mills, their production and consumption never in balance, with the result that inventories pile up, the normal supply of labor is from time to time unemployed and profits are generally lagging. The law of the land prevents these lumbermen from consorting for a division of territory, elimination of undue competition and regulation of price, a consortium of this sort being called "conspiracy in restraint of trade." Such beneficial and desirable consortium is only permitted as these men consolidate their interests in a single company.

The urge is toward the larger unit and so, in this necessary and inevitable process of waste elimination, we must look to and welcome the trend to the larger industrial unit, and our larger public utility unit, our larger railroad unit, and our larger banking unit must likewise develop to serve industry efficiently. Let us welcome this and every other trend that will spur to action the process of waste elimination, a subject to which men's minds will turn as surely and as effectively in the years to come as they have in past years in the development of a higher degree of production.

## 2. More Efficient Management

Hugo Diemer, Director of Management Courses and Personnel of the La Salle Extension University, has developed the matter of administrative personnel as a factor in increasing profits as follows:

### 1. Recognition of the Staff Principle in Business Organizations.

Recognition of this principle involves the inclusion in every organiza-

tion of any size, of certain staff members, such as: Head of the business research and market analysis department; head of the salesmanship personnel and training department; head of an industrial engineering or organizing engineering department controlling operative or production research, such as time studies, methods engineering, cost predetermination, etc.; head of the personnel and industrial relations department, whose duty it is to coördinate his specialized knowledge with the line administration of all departments; and head of the statistical department, which will concern itself with the gathering and comparison of facts and data not disclosed by the routine operative systems directly, but essential to the sound understanding of the business.

## 2. Proper Selection of Directors and Officials.

Directors and officials should be selected, "who, if they do not already possess personal knowledge of modern management principles, science and philosophy, are determined to acquire a mastery of that knowledge. This principle involves the retirement from boards of directors and official families, of a type too predominant in business and particularly among those businesses who do not show any profit, namely, that type of strong-willed, domineering, ignorant, and prejudiced officials and directors who are more interested in combat and intrigue than in solving their business problems with a full understanding of modern economic and social conditions.

## 3. Cost Accounting

The summary given in Chapter II shows that the profits in the larger corporations are increasing while they are declining somewhat in the case of the smaller firms. The larger companies are the ones that have made the greatest progress in the installation of cost systems, which place them in a better position to analyze sales prices with relation to costs, and thus to secure more satisfactory profits.

The printing industry has been given as an example of a field in which cost accounting has aided in the maintenance of satisfactory profits, and there are many other industries which can also attribute much of their prosperity to the data furnished the executives through modern cost accounting methods.

Cost accounting alone will not result in profits, but cost accounting as a toll in the hands of efficient management is always a builder for better control and more profits.

## 4. Research

The larger firms also lead in the matter of research. They can afford to engage specialists to work out better methods of produc-

tion, to invent new products, and to plan more effective distribution and merchandising methods. The smaller firms cannot afford to spend money for research, and so must rely upon the results of the investigations of trade associations and of the various governmental bodies.

Much valuable research work is being done at the present time through both of the above channels, and the smaller businesses are profiting thereby. The results of such investigations are, of course, usually more general than those conducted by the research specialists of the large corporations, and cannot be so readily translated into terms of profits. They should, however, serve to help the small business to maintain its position in the fight with its larger competitors, provided the executives of the small concern are alert to find out about the results of these investigations and to apply them to current problems of production and distribution.

A plan of research through the use of the facilities of the great State Universities of the country is being developed at this time in the "New Wisconsin Idea" which Dr. Glenn Frank of the University of Wisconsin has defined as "putting the research facilities at the disposal of the basic groups in the life of the state."

He says in part:

The democratic civilization of our states becomes really modern only as it discards the rule of thumb and substitutes the rule of research. The large-scale business and industrial organizations of the United States know this. And they are in position to spend millions of dollars in putting a research basis under their policies and their methods. But in all our states there are hundreds of small businesses and less opulent organizations of occupational groups that cannot afford to employ great research staffs. And yet the stability and worth of the social and economic life of the nation would be vastly increased if they could. I suggest, therefore, that good social statesmanship requires that we devise ways and means of enabling the smallest business man or farmer or manufacturer or labor group in any one of our states to have access to just as good research counsel as the United States Steel Corporation or the General Electric are able to employ.

Here, I think, is one of the important functions of the state university as it is being developed in the United States.

### C. SUMMARIES

#### 1. By Dr. George W. Edwards

Dr. George W. Edwards, Dean of the School of Business and Civic Administration of the College of the City of New York, has

summarized the trend of the past few years and given a scholarly analysis of the causes of this trend as follows:

If we examine the records of the past few years, we are able to discern an upward movement of profits for business as a whole. Starting with the year 1921, we find American business firms, if taken in the aggregate, with deductions of losses of the unfortunate firms, doing little more than break even. Less than half a billion dollars is to be credited to net profits for that year. The following year witnessed marked improvement, while 1923 experienced profits which exceeded losses by over six billion dollars. If we except the setback of 1924, this upward trend may be considered as continuing through 1926 and as suffering only a minor drop in 1927.

Of special significance, it would appear, is the fact that this satisfactory movement of aggregate profits has accompanied a general downward movement of prices, and in some instances, notably in 1923, the upward swing of profits has continued in spite of a diminished volume of production. A partial explanation of this surprising situation is to be found, no doubt, in the improved technique of production, the more efficient management, and the advantageous combination of industry—all of which have lowered the cost of production and maintained a satisfactory spread between costs and selling price even though the latter had become lower.

Even so, the high level of aggregate profits does not mean that universal prosperity has prevailed throughout business. Every year during the period under discussion, more than four-tenths of American corporations have reported losses. Even in the prosperous year 1925, the losses of this unfortunate group amounted to approximately two billion dollars. Undoubtedly the logical conclusion is that if an adequate knowledge of profits is to be obtained, we must look at subdivisions of industry rather than at business in the aggregate. A cursory survey of business conditions of the past few years serves to substantiate this belief. It appears that while the bulk of American industries were enjoying prosperity, some unfortunate industries were fighting against losses that appeared inevitable. In fact, during the time under discussion, a number of industries suffered from such difficulties for a more or less extended period. In the textile and leather industries, these difficulties appeared insuperable. In mining, a substantial majority of the firms are reported to have failed to show a profit. The railroads attained their present more or less satisfactory position only after a hard struggle in which they advanced from a depressed condition. Farm implements, rubber and even oil, may be mentioned among the lines in which firms throughout the entire industry found their profit statements unsatisfactory at some time during the period under discussion.

But if industries fail to keep step with the general trend, it is equally true that firms within an industry often diverge from what may be accepted as a distinct trend for the industry as a whole. Some firms were enjoying profits when their industries were depressed, while at other times, when the industry as a whole was enjoying prosperous con-

ditions, individual firms could be found that were actually losing money. Thus, for example, the banner year 1923 witnessed record prosperity in building operations, in food production, and in automobile manufacturing; but in each of these lines there was a number of firms with unfavorable records.

These facts are recalled, not because they are of a startling nature, but rather because they refer to conditions the existence of which is so common that they may be used as the basis for a few general observations. It would appear that in explaining any "trends" of profits, we must go farther than explain the factors which have affected profits in the aggregate. While we must recognize the important effect of general business conditions on the profits of distinct industries and specific firms, we cannot overlook the fact that variations among industries and firms show that the power of these subdivisions of business is more than that of simply approving or vetoing the influence of "general business." In fact, a complete explanation of the situation would involve a consideration of the influence of definite developments among individual plants and industries upon that rather vague something which we term general business prosperity. The improvement in technique, the combination of industries, and the use of more efficient management have already been mentioned as factors that have contributed toward an increase in aggregate profits. We may now observe that each of these advances originated in the individual business units and that a logical sequence demands that we explain general business prosperity in terms of these developments.

Another interesting aspect of recent business developments is that in many cases the prosperous firms or industries have attained their positions because they were at the front in grasping new business opportunities. A glance at a list of leaders (at least in the matter of magnitude of profits) shows a large number of firms that are distinctly the product of recent developments in which they have shared and to which they have contributed. We would think first of the phenomenal rise of the automobile industry to first place among American industries. Then there are its satellites—the rubber industry in which there are several firms that show profits above the ten-million-dollar mark, and the oil business in which there are a dozen or so companies in this class. The electrical companies, symbolical of a new age in technical equipment, and the chain stores, representing an advance in the technique of marketing, have also joined the ranks of leading firms. Without an undue amount of imagination, we might attribute the rise of baking companies (two or three of which have entered the sphere of big business) and even the activities of the American Can Company to changes in the habits of consumption of the American people. The profits of these companies are to be explained largely by the fact that they grasped opportunities at the proper time.

This characteristic ability of American business men to grasp new opportunities and even to create them, has undoubtedly had a predominant influence on profits in the past. It is probably safe to surmise, therefore, that the future trend of aggregate profits will depend in a large measure upon the initiative taken by American business men acting

individually in accepting both the challenge offered by new business conditions and the challenge to advance by discovering new ways and means of producing, marketing, and financing. We may rest assured that the advancement of the last few years has not exhausted these sources of progress and profits. Certainly there is ample room for improvement in the means and methods employed by American business men. Also, there is apparently little reason to fear an abatement in the flow of these new inventions and products which have acted as incentives for new business ventures in the past. Then as long as outside influences maintain a *status quo* it appears that the present situation simply repeats the challenge of the past few years. Upon what business concerns, acting individually, do with this challenge will depend in large measure what their own profit statement will show, what will happen to general business activities, and what the future trend of profits will be.

## 2. Report Published by Sherman Corporation

The Sherman Corporation of Boston, in an effort to learn the causes of increases or decreases in net profits, recently made a survey covering 30 industries. The summary indicates that 51% of the companies covered by the survey showed an increase in profits in 1927 as compared with 1926, and 49% showed a decrease.

. . . 86% of the concerns reporting profit increases said they had reduced unit cost to manufacture. Of concerns reporting profit, 64% said "yes" to this point. Of the profit increase group, 63% said they reduced their overhead while 52% of the profit decrease group reported overhead reductions. And the concerns reporting improved profit position reduced expense to sell two to one as compared with the concerns reporting profit decreases.

In this age of high distributing costs, it is especially worthy of consideration that among those concerns which reported increased profits, selling cost reductions were proportionally twice as many as among the concerns which reported decreased profits.

The report further states that of the concerns reporting profit decreases, 27% increased sales volume and 64% cut selling price. The large proportion of price cutters is regarded as significant, particularly as "not getting a fair price" is regarded by many business executives as a big problem of manufacturing today.

The *Electrical World* recently published a summary of this report, and continues:

The outstanding conclusions drawn, with the report as a basis, are given as follows:

1. The product itself is of primary importance. Its quality should not be impaired, but improved and kept at high standards. One way out for the manufacturer is to develop merchandise of such quality that price-cutting tendencies can be met by getting into a class of business not dependent primarily on price. It is a day when an honest product is fundamental.

2. In manufacturing there can be no let-up in sound cost reductions. Increasing inventory turnover, getting greater value for the labor dollar, reduction of overhead, and reducing time of manufacture are thorough-going economy programs that are vitally essential today in all lines of manufacture.

3. Much of the profit decline may be traced back to a hectic scrambling for a larger share of a market of certain fixed size and scope. If there is just so much market available, then cutting price to get more of that market simply takes away from another manufacturer. Therefore, the necessity of developing new markets.

4. Research, a "competition in creation instead of on price" development of new products—these practices will open new markets and allow perhaps a better production in plants working 40-50-60% capacity.

5. Price maintenance, wherever possible, is vitally essential. "Price fixing" is out of the question. But the individual manufacturer who has a bottom price and conducts business solidly and courageously, even at a loss of certain volume, with the idea of keeping a semblance of soundness in his price situation is rendering manufacturing industry a real service and laying the groundwork for improved profit position.

6. The big punch in manufacturing business is Selling Expenses. Thorough analysis of sales with the purpose of reducing costs to sell is essential.

7. Consolidations and mergers on a basis of economical future operations, especially reduction of selling and distribution expenses and not solely on the "window dressing" of past earnings records, are inevitable.

### 3. By John Moody of Moody's Investors' Service

Moody's Investors' Service in the April 26, 1928, bulletin has given a very complete analysis of the business development of the past five years and of the probable development for the next five years. This analysis applies particularly to security prices, but is just as applicable to business conditions as a whole and particularly to business profits, which are the fundamental bases of the prices of individual securities.

This survey states as follows:

In 1923 business in this country was just beginning definitely to recover from the shock of the deflation crash of 1920-1921. Liabilities

by that time had been quite thoroughly liquidated and deflation had done its work in the fields of industry and finance; political and labor conditions were stable, and though Europe was still in the mire of despondency, and the French-German situation was acutely bad, there were not lacking signs that the Reparation problem was definitely heading towards a solution. Based on these general facts it was believed that better times were ahead.

But far more fundamental facts were present or in the making in 1923; facts which were overlooked or not generally weighed by the average observer. Some of these facts were as follows:

1. The World War had definitely changed the United States from a debtor to a creditor Nation; had enormously increased our plant and producing capacity and added to our wealth and resources to an extent which in peace times would have consumed two or three decades.

2. The Federal Reserve Banking System, by then fully functioning, had stabilized credit and for all time eliminated that breeder of financial panics (the old National banking system) which had been a menace to American progress for two generations.

3. The lessons taught by the crude financial errors of the speculative corporate period extending from 1898 down into the war and through to the deflation days of 1920-1921, had been well learned by business and financial interests all over the country, and the experiences of the war, both in America and abroad, had caused an immense decline in socialistic and radical sentiment; the disastrous failure of our government operation of railroads being a case in point.

4. The strong tendency which was going on in industry for the more scientific development of mass production and distribution, the cutting down of time in the delivery of goods and the speeding up of production and distribution in every direction. The consequent elimination of the speculative buyer of goods and the elimination of swollen inventories; a tendency which has been accentuated by the moderately declining trend of wholesale commodity prices.

5. The rapid development of new industries and introduction and perfection of modern inventions in every department of industry; the perfection of methods for the mobilization of investment capital; the broad diversification of investment holdings to millions of people who formerly possessed no corporate interests whatever.

6. The new stabilization of political and labor interests, labor being quite uniformly employed at high wages and sharing more and more in the profits of industry; and the general public, in a wide diversification of growing stability and prosperity, and as investors sharing more and more in corporate profits, growing stronger yearly in the belief that business enterprise and wealth production thrive best under non-political interference, though with all necessary regulation.

7. The beginning of recovery in Europe which set in definitely in 1923 and thereafter, which became more and more apparent as the years went by, involving the stabilization of Germany in 1924, the return to balanced budgets and stable currencies, the steady reduction in govern-

mental liabilities; all of which has reacted on America in an increasingly constructive way.

These are the main fundamental constructive facts which go far to explain the events in finance of the past five years; and when they are properly weighed it is clear enough that the growth of confidence, the optimism of the times and the upward trend of the financial markets have been fully justified. . . .

### THE COMING FIVE YEARS

Forecasts made in 1923 which correctly foreshadowed what has actually happened, would have been looked upon as fantastic by the average man; and possibly any present forecast of the coming five years will also be looked on as fantastic also. Nevertheless, we shall venture to predict that the coming period will probably prove fully as stable and constructive as has been the past five years. . . . We append below our reasons for this view.

1. The steady increase in the wealth and savings of the American people, which has been going on without material interruption for years and is still persisting, creating a plethora of available capital which has by no means been fully offset by the immense output of new securities nor the heavy borrowings of foreign peoples.

2. The beneficial effect on the capital supply of the modern "hand to mouth" policy of doing business. Corporate interests and business men generally no longer tie up large capital and credit in inventories, but accumulate great liquid reserves of cash and credit which have a directly easing effect on interest rates and prevent the development of credit stringency; and also make available for Wall Street investment large sums which would otherwise be tied up in business inventories. Compare the cash position of the typical corporation today with that of six or seven years ago.

3. The restoration in values of billions of dollars of bonds and stocks which, during and after the war into 1921-1922, had been deflated to the lowest figures of all history. As a concrete example of this, over \$5,000,000,000 of railroad bonds have recovered in market value more than 30% since 1920; an equal amount of standard railroad stocks have recovered in market price over 60%; such recoveries have not merely brought prices to the values of normal times, but have added immensely to the available capital supply.

4. The uniform confidence throughout the business world in the relative stability of things, engendered among the people as a result of the experience of the past five years; the deep conviction that financial panics are a thing of the past; that inventory inflation is out of date; that large-scale, economic methods of production and distribution have come to stay; that "hit or miss" policies in business are dying a certain death in America.

5. The stable or slightly declining trend of wholesale commodity prices the world over is an insurance against recurring dangers of speculative

inflation in business enterprise; and the practical certainty that this declining trend in raw material and other costs will continue for many years, just as it did in England for thirty years or more after the Napoleonic wars a hundred years ago. (It is to be noted that this was the period of England's greatest growth and prosperity, it being coincident with the famous "industrial revolution" of the nineteenth century; a revolution in industry and wealth-producing methods which is being duplicated on an immensely higher scale in America today.)

6. The growing stability and return to normal of the war-ridden Nations of Europe, and the steadily increasing probability that a long period of peace in the Old World is ahead of us.

7. The profound change which has been going on in the United States since the war days in the attitude of the people toward corporate enterprise. Today we are a Nation of Investors and nearly 20,000,000 people are said to be stock and bond holders in corporate enterprises and owners of government loans, a respectable percentage of which has gone permanently abroad. And in this connection it should be emphasized that during the past three or four years, a rapidly increasing percentage of investment capital in America is going into preferred and common stocks of corporations. This fact goes far to account for the remarkable stability of prices in our stock markets when, logically, large "corrective reactions" seem due to offset much overspeculation.

Many other reasons could be cited for believing that the coming five years may prove simply a continuance of the five years which have passed. It might be pointed out in this connection that, with stabilized and widely diffused prosperity, the public is less and less inclined to favor radical or dangerous political innovations; labor interests are more and more content as they find themselves getting a growing share of the profits of industry; the people in general look with more satisfaction on the growth and success of corporate enterprise as they become, more and more, the owners of these enterprises themselves.

### CONCLUSION

Naturally, all this does not imply that we have reached the millennium, nor that business reactions and other catastrophes have been abolished. We shall, as has been the case since 1923, have rises and falls in business conditions; we shall have our reactions and unsettlements in the security markets; but the fundamentals I have outlined are likely to maintain a broad period of prosperity and the swinging of the business cycle should be a modified swing as has been the case since 1923. And when business swings are moderate only, confidence is never seriously impaired, and the upward trend is soon resumed.

## CHAPTER VIII

### CONCLUSION

THE results of this investigation of the profit trend in American industry during the five years from 1923 to 1927, inclusive, show that although profits have declined for all companies in certain industries and for some companies, especially the smaller units, in many industries, profits in industry as a whole have not declined, but have been on somewhat of an upward trend. This upward trend has been confined almost exclusively to the large firms.

It appears, however, that it will be increasingly difficult for individual companies to maintain their present proportion of net profit unless the executives conduct their business according to certain definite standards:

#### 1. ELIMINATION OF WASTE.

The wastes of time, energy, and materials should be eliminated by

- (a) Educating the management in business fundamentals, so that administrative waste will be reduced to a minimum,
- (b) Keeping down expenses in every department of the business,
- (c) Standardizing products and methods,
- (d) Adopting sound credit policies, and
- (e) Utilizing all by-products in the most profitable manner.

#### 2. PRICE MAINTENANCE.

Prices should be maintained honestly and intelligently so that the business can be conducted at a profit. It is economically unsound to do business at a loss. Trade associations under the administration of a strong director assist materially in maintaining prices above actual cost.

### 3. CORRELATION OF PRODUCTION WITH DISTRIBUTION.

Production should be adjusted to demand so that a manufacturer will produce only what he can sell at a profit.

In order to eliminate waste, maintain price, and correlate production with distribution, it is absolutely necessary to make use of modern cost accounting, budgeting procedure, and research. It is of little use to have proper cost accounting and industrial records unless careful consideration is given to these records in the current conduct of the business.

There are so many factors beyond human control which influence business, such as crop and weather conditions, wars, political changes, economic changes, changes in styles, and fads and fancies, that it is imperative for the executive to use modern tools of management in order to operate his business on a profitable basis.

The investigation reveals that there are still profits for those businesses whose executives are keen enough to secure them and that in many industries these profits have been increasing in recent years rather than declining. Intelligent hard work adjusted to current opportunities and economic situations through the use of modern industrial accounting will produce satisfactory results from a profit standpoint.



## SCHEDULES



Table I-A. Net Income and Sales  
N.A.C.A. QUESTIONNAIRES—SUMMARY OF ALL RETURNS

	Num- ber of Re- turns	NET INCOME (000's omitted)						SALES (000's omitted)					
		1927	1926	1925	1924	1923		1927	1926	1925	1924	1923	
ALL INDUSTRIES .....	208	224,750	223,768	240,658	179,890	189,749		2,455,958	2,579,019	2,469,798	2,106,361	2,089,809	
TOTAL MANUFACTURING ...	280	206,411	211,961	226,039	108,085	179,542		2,235,582	2,367,260	2,274,542	1,931,649	1,938,890	
Food Products .....	18	16,631	11,830	11,820	9,119	7,390		312,356	335,300	207,153	255,476	227,863	
Textiles .....	14	1,760	1,382	3,168	580	3,686		44,067	44,463	51,369	41,772	61,104	
Clothing .....	21	2,456	2,137	3,666	2,282	3,170		47,465	47,566	49,613	44,108	47,924	
Leather Goods .....	15	22,768	17,415	16,749	17,075	14,396		158,038	149,803	146,404	140,552	142,206	
Rubber Goods .....	8	15,484	20,168	21,152	14,958	12,638		224,955	251,823	238,513	198,917	206,835	
Lumber & Millwork .....	15	2,167	2,307	1,787	1,437	2,051		25,095	26,829	29,210	19,774	21,342	
Furniture .....	16	1,780	2,818	2,344	2,132	3,361		26,022	28,422	27,255	26,477	28,988	
Paper, Pulp & Products ..	17	6,456	6,424	5,986	5,372	5,610		51,185	50,642	49,077	47,138	47,359	
Printing & Publishing ..	3	2,108	1,992	1,810	1,419	1,558		16,138	16,065	14,379	13,325	11,964	
Chemicals, Paints, etc..	17	7,599	7,457	6,658	5,190	5,088		54,972	53,527	49,047	43,548	44,084	
Stone, Clay & Glass....	13	6,233	6,396	5,891	5,664	5,439		37,260	36,718	33,115	29,284	28,841	
Electrical Equipment ..	9	2,751	2,366	2,442	2,671	2,047		23,262	28,256	23,260	21,386	19,871	
Automobiles & Parts....	7	52,399	56,484	81,627	51,118	49,582		572,453	631,891	656,006	505,516	463,733	
Machinery .....	20	4,742	4,943	3,717	2,594	3,813		42,766	41,963	39,067	31,922	30,681	
Heating & Plumbing Equip. ....	15	1,698	1,321	1,455	1,357	1,383		16,416	15,868	15,343	14,168	13,478	
Tools & Hardware .....	13	5,424	5,286	4,013	2,661	6,050		46,611	51,725	44,076	39,015	43,930	
Misc. Metal Products....	53	47,502	54,157	44,673	37,128	46,425		482,562	508,584	467,766	413,537	454,541	
Misc. Mfg. ....	12	6,454	7,098	7,081	6,488	5,965		53,959	50,435	49,883	46,734	41,556	
CONSTRUCTION & TRADE...	7	17,825	11,590	14,404	11,698	10,203		215,899	207,582	191,052	171,217	151,638	
MISC. MINING, QUARRYING, OIL PRODUCING & REFIN- ING, ETC. ....	5	514	217	215	112	4		4,477	4,177	4,204	3,495	4,081	

**Table I-B. Percentage Net Income to Sales**  
**N.A.C.A. QUESTIONNAIRES—SUMMARY OF ALL RETURNS**

	Number of Returns	NET INCOME				
		1927	1926	1925	1924	1923
ALL INDUSTRIES .....	298	9.2	8.7	9.7	8.5	9.1
TOTAL MANUFACTURING .....	286	9.2	8.9	9.9	8.7	9.3
Food Products .....	18	5.3	3.6	4.0	3.6	3.2
Textiles .....	14	4.0	3.1	6.1	*	6.0
Clothing .....	21	5.2	4.5	7.4	5.2	6.7
Leather Goods .....	15	14.4	11.7	11.4	12.2	10.1
Rubber Goods .....	8	6.9	8.0	8.9	7.5	6.1
Lumber and Millwork.....	15	8.6	9.1	7.7	7.3	9.6
Furniture .....	16	6.8	9.8	8.6	8.4	12.5
Paper, Pulp, and Products..	17	12.6	12.7	12.2	11.4	11.9
Printing and Publishing....	3	13.1	13.2	12.6	10.7	13.1
Chemicals, Paints, etc.....	17	13.8	13.9	13.6	11.9	11.5
Stone, Clay, and Glass.....	13	16.7	17.4	17.8	19.3	18.9
Electrical Equipment .....	9	11.8	8.4	10.5	12.5	10.3
Automobiles and Parts.....	7	9.2	8.9	12.4	10.1	10.7
Machinery .....	20	11.1	11.8	9.5	8.1	12.4
Heating and Plumbing Equip.	15	10.3	8.3	9.5	9.6	9.9
Tools and Hardware.....	13	11.6	10.2	9.1	6.8	13.8
Misc. Metal Products.....	53	9.8	10.6	9.6	9.0	10.2
Misc. Mfg. ....	12	12.0	14.1	14.2	13.9	14.3
CONSTRUCTION AND TRADE.....	7	8.3	5.6	7.5	6.8	6.7
MISC. MINING, QUARRYING, OIL PRODUCING AND REFINING...	5	11.5	5.2	5.1	3.2	0.1

\* Deficit.

Table I-C. Percentages of Net Income and Sales on Basis of 100% for 1923  
N.A.C.A. QUESTIONNAIRES—SUMMARY OF ALL RETURNS

	Number of Returns	NET INCOME					SALES				
		1927	1926	1925	1924	1923	1927	1926	1925	1924	1923
		118	118	127	95	100	118	123	118	101	100
ALL INDUSTRIES .....	298	115	118	126	94	100	116	122	118	100	100
TOTAL MANUFACTURING .....	286										
Food Products .....	18	225	160	160	123	100	137	147	130	112	100
Textiles .....	14	48	37	86	*	100	72	73	84	68	100
Clothing .....	21	77	67	116	72	100	100	100	104	93	100
Leather Goods .....	15	159	121	117	119	100	111	105	103	99	100
Rubber Goods .....	8	123	160	167	118	100	109	122	115	96	100
Lumber and Millwork .....	15	106	112	87	70	100	118	119	109	92	100
Furniture .....	16	53	84	70	63	100	96	107	101	94	100
Paper, Pulp and Products ..	17	115	115	107	96	100	108	107	104	99	100
Printing and Publishing .....	3	135	128	116	91	100	135	126	120	111	100
Chemicals, Paints, etc. ....	17	149	146	131	102	100	125	121	111	99	100
Stone, Clay and Glass Products .....	13	114	118	108	104	100	130	128	116	102	100
Electrical Equipment .....	9	134	116	119	130	100	117	142	117	108	100
Automobiles and Parts .....	7	106	114	165	103	100	123	136	141	109	100
Machinery .....	20	124	130	97	68	100	139	137	127	104	100
Heating and Plumbing Equipment .....	15	127	99	109	102	100	122	118	114	105	100
Tools and Hardware .....	13	90	87	66	44	100	106	118	100	89	100
Misc. Metal Products .....	53	102	117	96	80	100	106	112	108	91	100
Misc. Mfg. ....	12	108	119	119	109	100	130	121	120	112	100
CONSTRUCTION AND TRADE ..	7	175	114	141	115	100	142	137	126	113	100
MISC. MINING, QUARRYING, OIL PRODUCING AND REFINING, ETC. ....	5	459†	194†	192†	100†	...	110	102	103	85	100

\* Deficit.

† On basis of 100% for 1924.

Table I-D. Net Income and Sales

N.A.C.A. QUESTIONNAIRES—SUMMARY OF RETURNS OF 255 FIRMS, EACH HAVING A NET ANNUAL INCOME OF LESS THAN \$1,000,000

	Number of Returns	NET INCOME (000's omitted)					SALES (000's omitted)				
		1927	1926	1925	1924	1923	1927	1926	1925	1924	1923
ALL INDUSTRIES .....	255	32,370	30,405	32,101	26,157	33,882	471,984	478,710	463,520	421,354	436,089
TOTAL MANUFACTURING .....	245	31,481	29,589	31,196	25,602	33,147	460,581	466,500	451,477	411,545	424,537
Food Products .....	13	1,668	1,934	2,249	1,855	1,992	74,611	74,858	71,980	65,157	63,048
Textiles .....	12	843	4	811	649	1,449	13,797	12,774	16,305	13,797	17,558
Clothing .....	21	2,456	2,137	3,666	2,282	3,170	47,405	47,556	49,613	44,108	47,624
Leather Goods .....	14	2,290	2,062	2,155	1,803	2,146	33,732	32,322	32,138	30,311	32,373
Rubber .....	6	1,581	312	961	298	381	19,145	21,374	21,470	19,173	15,370
Lumber & Millwork .....	14	944	855	1,230	1,122	1,977	16,856	18,457	19,324	17,820	20,266
Furniture .....	16	1,780	2,318	2,344	2,132	3,361	20,022	28,822	27,255	25,477	26,988
Paper, Pulp & Products .....	14	1,996	1,981	1,482	1,707	1,845	21,754	21,983	20,648	20,409	20,153
Chemicals, Paints, etc. ....	15	1,795	1,600	1,512	1,173	1,592	22,937	21,136	18,841	16,653	17,469
Stone, Glass & Clay .....	11	412	691	509	932	1,354	7,763	8,184	7,913	8,373	9,696
Electrical Equipment .....	8	1,761	1,134	915	1,051	831	13,028	12,819	10,963	10,479	10,023
Machinery .....	18	3,393	3,190	2,400	873	1,532	28,963	28,530	23,817	19,611	19,096
Heating & Plumbing Equipment	15	1,698	1,321	1,455	1,357	1,333	16,416	15,868	15,343	14,168	13,478
Tools & Hardware .....	11	2,515	1,810	1,277	1,488	1,794	11,681	11,574	11,108	10,975	11,756
Misc. Metal Products .....	45	5,731	7,188	6,976	5,591	7,234	94,630	98,554	92,675	83,703	89,027
Misc. Mfg.* .....	12	1,123	1,184	1,254	1,289	1,186	11,781	11,749	12,084	11,241	10,612
CONSTRUCTION & TRADE .....	5	375	659	690	443	731	6,926	7,973	7,848	6,314	7,471
MISC. MINING, QUARRYING, OIL PRODUCING & REFINING, ETC...	5	514	217	215	112	4	4,477	4,177	4,204	3,495	4,081

\* Including firms of which there were less than three in a class, in order not to reveal identity of reporting firms.

Table I-E. Percentages of Net Income to Sales

N.A.C.A. QUESTIONNAIRES—255 FIRMS, EACH HAVING A NET ANNUAL INCOME OF LESS THAN \$1,000,000.

	Number of Returns	PERCENTAGES NET INCOME OF NET SALES				
		1927	1926	1925	1924	1923
ALL INDUSTRIES .....	255	6.9	6.4	6.9	6.2	7.8
TOTAL MANUFACTURING .....	245	6.8	6.3	6.9	6.2	7.8
Food Products .....	13	2.2	2.6	3.1	2.9	3.1
Textiles .....	12	2.5	*	5.0	4.7	8.3
Clothing .....	21	5.2	4.5	7.4	5.2	6.7
Leather Goods .....	14	6.8	6.4	6.7	5.9	6.6
Rubber .....	6	8.3	*	4.5	1.6	2.5
Lumber and Millwork.....	14	5.6	4.6	6.4	6.3	9.8
Furniture .....	16	6.8	9.8	8.6	8.4	12.5
Paper, Pulp and Products.....	14	9.2	9.0	7.2	8.3	9.2
Chemicals, Paints, etc.....	15	7.8	7.6	8.0	7.0	9.1
Stone, Glass and Clay.....	11	5.3	8.4	6.4	11.1	14.0
Electrical Equipment .....	8	13.5	8.8	8.3	10.1	8.3
Machinery .....	18	11.7	11.2	10.1	-4.5	8.0
Heating and Plumbing Equip- ment .....	15	10.3	8.3	9.5	9.6	9.9
Tools and Hardware.....	11	21.5	15.6	11.5	13.6	15.3
Misc. Metal Products.....	45	6.1	7.3	7.5	6.7	8.1
Misc. Mfg. ....	12	9.5	10.1	10.4	11.5	11.2
CONSTRUCTION AND TRADE.....	5	5.4	8.3	8.8	7.0	9.8
MISC. MINING, QUARRYING, OIL PRODUCING AND REFINING, ETC..	5	11.5	5.2	5.1	3.2	0.1

\* Defect.

Table I-F. Percentages of Net Income and Sales on Basis of 100% for 1923  
N.A.C.A. QUESTIONNAIRES—255 FIRMS, EACH HAVING A NET ANNUAL INCOME OF LESS THAN \$1,000,000

	Number of Returns	NET INCOME					SALES				
		1927	1926	1925	1924	1923	1927	1926	1925	1924	1923
		96%	90%	95%	77%	100%	108%	110%	106%	97%	100%
ALL INDUSTRIES .....	255	95	89	94	77	100	108	110	106	97	100
TOTAL MANUFACTURING .....	245										
Food Products .....	13	85	99	115	95	100	118	119	114	103	100
Textiles .....	12	24	*	56	45	100	79	73	93	79	100
Clothing .....	21	77	67	116	100	100	100	100	104	93	100
Leather Goods .....	14	107	96	100	84	100	104	100	99	94	100
Rubber Goods .....	6	415	*	252	78	100	124	139	140	125	100
Lumber and Millwork .....	14	48	43	62	57	100	83	91	95	88	100
Furniture .....	16	53	84	70	63	100	96	107	101	94	100
Paper, Pulp and Products .....	14	108	107	80	93	100	108	109	102	102	100
Chemicals, Paints, etc. ....	15	113	100	95	74	100	131	121	108	95	100
Stone, Clay and Glass Products .....	11	30	51	38	69	100	80	84	82	86	100
Electrical Equipment .....	8	212	136	110	126	100	130	128	109	104	100
Machinery .....	18	221	208	157	57	100	152	149	125	103	100
Heating and Plumbing Equipment .....	15	127	99	109	102	100	122	118	114	105	100
Tools and Hardware .....	11	140	101	71	83	100	99	98	94	93	100
Misc. Metal Products .....	45	79	99	96	77	100	106	111	104	94	100
Misc. Mfg.t .....	12	95	100	106	109	100	111	111	113	106	100
CONSTRUCTION AND TRADE .....	5	51	90	94	61	100	93	107	105	85	100
MISC. MINING, QUARRYING, OIL PRODUCING AND REFINING, ETC. ....	5	459†	194†	192†	100†	...	110	102	103	86	100

\* Deficit.

† Including firms of which there were less than three in a class, which have been grouped in order not to reveal identity of reporting firms.

‡ On basis of 100% for 1924.

**Table I-G. Net Income and Sales**  
**N.A.C.A. QUESTIONNAIRES—SUMMARY OF RETURNS OF 43 FIRMS REPORTING NET INCOME IN ONE OR MORE YEARS OF MORE THAN \$1,000,000**

	Num-ber of Re- turns	NET INCOME (000's omitted)					SALES (000's omitted)				
		1927	1926	1925	1924	1923	1927	1926	1925	1924	1923
<b>ALL INDUSTRIES .....</b>	<b>43</b>	<b>192,880</b>	<b>193,303</b>	<b>208,557</b>	<b>153,738</b>	<b>155,867</b>	<b>1,983,974</b>	<b>2,100,309</b>	<b>2,006,269</b>	<b>1,685,007</b>	<b>1,653,520</b>
Food Products Mfg. ....	5	14,968	9,896	9,571	7,294	5,428	237,745	260,442	225,178	190,319	164,815
Paper, Pulp & Products .....	3	4,459	4,413	4,504	3,665	3,765	29,481	28,669	28,429	26,689	27,106
Automobiles Mfg. ....	6	52,841	56,434	81,608	51,087	49,562	671,732	631,245	665,308	504,761	471,000
Metal Mfg. ....	13	47,019	53,430	43,277	36,061	46,944	440,899	478,041	485,606	381,092	416,221
Other Mfg., Const. & Trade .....	16	73,593	69,110	69,602	55,666	50,163	698,167	700,922	661,753	582,160	579,282

**Percentage of Net Income and Sales on Basis of 100% for 1923**

	Num-ber of Re- turns	NET INCOME					SALES				
		1927	1926	1925	1924	1923	1927	1926	1925	1924	1923
<b>ALL INDUSTRIES .....</b>	<b>43</b>	<b>123%</b>	<b>124%</b>	<b>124%</b>	<b>99%</b>	<b>100%</b>	<b>120%</b>	<b>127%</b>	<b>121%</b>	<b>102%</b>	<b>100%</b>
Food Products Mfg. ....	5	276%	182%	177%	134%	100%	144%	158%	137%	115%	100%
Paper, Pulp & Products .....	3	118	118	120	97	100	109	106	105	98	100
Automobiles Mfg. ....	6	106	114	165	103	100	123	136	142	109	100
Metal Mfg. ....	13	100	114	92	77	100	107	114	104	91	100
Other Mfg., Const. & Trade .....	16	147	138	139	111	100	121	121	114	101	100

**Percentage of Net Income to Sales**

	Num-ber of Re- turns	PERCENTAGE NET INCOME OF NET SALES				
		1927	1926	1925	1924	1923
<b>ALL INDUSTRIES .....</b>	<b>43</b>	<b>9.7%</b>	<b>9.2%</b>	<b>10.4%</b>	<b>0.1%</b>	<b>9.4%</b>
Food Products Mfg. ....	5	6.3	3.8	4.3	3.8	8.8
Paper, Pulp & Products .....	3	15.2	15.5	15.9	13.7	13.9
Automobiles Mfg. ....	6	9.2	8.9	12.5	10.1	10.7
Metal Mfg. ....	13	10.5	11.2	9.9	9.5	11.2
Other Mfg., Const. & Trade .....	16	10.5	9.9	10.5	9.6	8.7

**Table II-A. Profit Trend in American Industry**  
**NET INCOME OF 350 CORPORATIONS AS LISTED IN MOODY'S AND COMMERCIAL AND FINANCIAL CHRONICLE**  
**FOR FIVE YEARS 1923 TO 1927**

INDUSTRY	NUM- BER OF COM- PANIES	PERCENTAGE OF 1923 INCOME					INCOME (Thousands of Dollars)				
		1927	1926	1925	1924	1923	1927	1926	1925	1924	1923
		141	146	128	98	100	\$1,987,452	\$2,065,663	\$1,807,801	\$1,386,572	\$1,411,971
TOTAL .....	350	105	181	157	107	100	206,714	355,337	308,899	211,158	196,500
MINING AND OIL.....	48										
Coal Mining .....	16	19	58	15	44	100	6,288	19,043	4,891	14,385	32,786
Metal Mining .....	15	175	186	162	100	100	49,850	66,008	46,345	28,666	28,552
Oil Production and Refining..	17	111	206	189	123	100	150,576	280,226	257,663	168,107	135,162
MANUFACTURING .....	174	142	134	117	89	100	894,961	847,265	738,817	561,759	631,162
Food Products and Beverages											
n.e.s.* .....	17	158	155	122	125	100	101,005	99,325	78,230	79,759	63,938
Dairy Products .....	3	247	239	164	110	100	18,489	17,885	12,802	8,209	7,491
Tobacco .....	6	149	148	144	134	100	34,894	34,284	33,887	31,424	23,490
Textiles and Textile Products	12	38	†	24	†	100	8,649	2,941	5,517	7,071	22,969
Clothing .....	10	79	74	77	43	100	10,883	10,200	10,595	5,891	13,695
Leather and Leather Products	6	204†	92†	154†	100†	†	8,884	4,006	6,717	4,356	6,810
Rubber and Rubber Goods....	10	165	131	314	180	100	33,423	30,562	63,582	36,453	20,221
Lumber and Wood Products...	4	46	66	58	79	100	4,334	6,206	5,485	7,431	9,378
Paper, Pulp, and Products...	10	71	74	83	82	100	10,065	10,495	11,771	11,727	14,258
Printing and Publishing.....	4	134	110	97	94	100	4,817	3,960	3,499	3,395	3,602
Chemicals and Allied Sub- stances .....	13	172	162	123	103	100	126,734	119,377	90,461	75,501	73,617
Stone, Clay, and Glass Prod- ucts .....	11	60	81	79	78	100	23,449	31,274	30,603	30,424	38,768

Table II-A (Continued)

INDUSTRY	NUM. OF COM- PANIES	PERCENTAGE OF 1923 INCOME					INCOME (Thousands of Dollars)				
		1927	1926	1925	1924	1923	1927	1926	1925	1924	1923
MANUFACTURING (Continued)											
Automobiles and Accessories.	12	230	182	139	65	100	\$272,040	\$215,544	\$164,378	\$77,511	\$118,456
Electrical Equipment . . . . .	10	146	135	125	117	100	86,329	79,626	73,999	69,194	59,062
Machinery, n.e.s.* . . . . .	5	119	149	110	84	100	14,282	17,861	13,158	10,459	12,004
Farm Machinery and Equip- ment . . . . .	2	889	443	818	65	100	3,473	3,957	2,834	583	892
Heating and Plumbing Equip- ment—Metal . . . . .	2	87	101	93	89	100	18,750	21,727	19,986	19,103	21,569
Railway Equipment . . . . .	4	58	82	24	48	100	18,450	26,029	7,546	15,286	31,693
Metal and Metal Products, Misc. . . . .	22	98	117	100	74	100	84,210	106,179	90,959	67,162	90,620
All Other Manufacturing . . . .	11	96	96	109	122	100	11,801	11,765	13,308	14,902	12,249
PUBLIC UTILITIES AND RAILROADS											
Rail Transportation . . . . .	23	134	156	131	101	100	293,133	342,708	287,036	220,884	219,230
Water Transportation . . . . .	4	248	180	280	168	100	4,328	3,154	4,881	2,931	1,746
Local Transportation, Cartage, Storage . . . . .	13	134	121	112	95	100	14,320	12,926	12,041	10,164	10,704
Electric Light and Power and Gas Companies . . . . .	35	200	171	141	115	100	141,027	120,399	99,454	80,719	70,445
Telephone and Telegraph . . . .	14	170	155	140	113	100	226,811	205,565	186,297	149,896	133,080
MISCELLANEOUS											
Agriculture (Tropical Fruits and Sugar) . . . . .	39	138	120	114	100	100	206,108	173,309	170,436	149,061	149,104
Construction . . . . .	4	34	4	22	92	100	4,974	650	3,137	13,369	14,557
Trade . . . . .	2	173	159	119	102	100	7,007	6,482	4,856	4,130	4,060
Service (Hotels, Amusements, etc.) . . . . .	20	143	129	122	98	100	162,981	146,605	138,956	112,110	113,863
Finance . . . . .	7	164	136	136	116	100	16,735	13,836	13,881	11,820	10,201
	6	224	167	150	119	100	14,411	10,786	9,606	7,632	6,423

\* n.e.s.—Not elsewhere specified.

† Net loss.

‡ On basis of 100% for 1924.

Table II-B. Profit Trend in American Industry  
 NET INCOME OF 75 CORPORATIONS, EACH HAVING A NET ANNUAL INCOME OF LESS THAN \$1,000,000  
 AS LISTED IN MOODY'S AND COMMERCIAL AND FINANCIAL CHRONICLE  
 FOR FIVE YEARS 1923 TO 1927

INDUSTRY	NUM- BER OF COM- PANIES	PERCENTAGE OF 1923 INCOME					INCOME (Thousands of Dollars)				
		1927	1926	1925	1924	1923	1927	1926	1925	1924	1923
		73	104	100	66	100	\$16,802	\$23,977	\$23,115	\$15,185	\$23,129
TOTAL .....	75	†	101	58	†	100	1,806	3,101	1,789	610	3,072
MINING AND OIL.....	13										
Coal Mining .....	8	†	29	39	34	100	1,722	1,059	1,477	1,253	3,711
Metal Mining .....	5	37x	656x	100x	†	†	116	2,042	312	1,863	639
Oil Production and Refining..	6	...	...	...	...	...	...	...	...	...	...
MANUFACTURING .....	42	72	93	100	61	100	10,246	13,197	14,104	8,666	14,144
Food Products and Beverages	3	86	46	43	85	100	507	657	601	1,203	1,409
Dairy Products .....	..	...	...	...	...	...	...	...	...	...	...
Tobacco .....	4	148	†	76	†	100	1,019	238	528	1,312	691
Textiles and Textile Products											
Clothing .....	4	53	70	61	29	100	1,264	1,532	1,322	633	2,185
Leather and Leather Products	3	46	186	528	434	100	81	326	924	758	176
Rubber and Rubber Goods...	2	†	274†	255†	100†	†	430	279	280	102	409
Lumber and Wood Products..	1	73	71	82	75	100	510	498	578	530	702
Paper, Pulp, and Products...	5	84	90	94	68	100	1,865	2,000	2,080	1,502	2,212
Printing and Publishing...	2	104	73	89	85	100	1,036	727	886	847	996
Chemicals and Allied Sub- stances .....	2	160	53	92	89	100	1,738	571	997	970	1,085
Stone, Clay, and Glass Prod- ucts .....	2	†	†	25	69	100	153	21	154	423	615

Table II-B (Continued)

INDUSTRY	NUM- BER OF COM- PANIES	PERCENTAGE OF 1923 INCOME					INCOME (Thousands of Dollars)				
		1927	1926	1925	1924	1923	1927	1926	1925	1924	1923
MANUFACTURING (Continued)											
Automobiles and Accessories.	2	†	181	59	†	100	622	1,444	646	919	1,099
Electrical Equipment . . . . .	3	79	282	190	185	100	485	1,741	1,177	1,147	1,618
Machinery, n.e.s.* . . . . .	..	...	...	...	...	...	...	...	...	...	...
Farm Machinery and Equip- ment . . . . .	1	†	171	210	169	100	340	440	540	485	257
Heating and Plumbing Equip- ment—Metal . . . . .	..	...	...	...	...	...	...	...	...	...	...
Railway Equipment . . . . .	..	...	...	...	...	...	...	...	...	...	...
Metal and Metal Products, Misc. . . . .	3	58	72	98	78	100	964	1,190	1,625	1,289	1,652
All Other Manufacturing . . . . .	5	277	240	209	123	100	2,372	2,051	1,788	1,058	887
PUBLIC UTILITIES AND RAILROADS											
Rail Transportation . . . . .	..	145	137	121	124	100	6,912	6,551	5,800	5,912	4,777
Water Transportation . . . . .	..	...	...	...	...	...	...	...	...	...	...
Local Transportation, Cartage, Storage . . . . .	5	334	380	273	410	100	1,186	1,124	926	1,402	840
Electric Light and Power Gas Companies . . . . .	9	134	124	110	100	100	4,917	4,564	4,043	3,680	3,675
Telephone and Telegraph . . . . .	2	113	113	109	109	100	859	863	881	830	762
MISCELLANEOUS											
Agriculture . . . . .	4	110	99	125	107	100	1,250	1,128	1,422	1,217	1,136
Construction . . . . .	..	...	...	...	...	...	...	...	...	...	...
Trade . . . . .	..	...	...	...	...	...	...	...	...	...	...
Service (Hotels, Amusements, etc.) . . . . .	1	370	284	224	158	100	248	190	150	106	67
Finance . . . . .	3	94	88	119	104	100	1,002	938	1,272	1,111	1,069

\* n.e.s.—Not elsewhere specified.

† Net loss.

‡ On basis of 100% for 1924.

x On basis of 100% for 1925.

Table II-C. Profit Trend in American Industry

NET INCOME OF 275 CORPORATIONS, EACH HAVING A NET INCOME IN ONE OR MORE YEARS OF MORE THAN \$1,000,000  
AS LISTED IN MOODY'S AND COMMERCIAL AND FINANCIAL CHRONICLE  
FOR FIVE YEARS 1923 TO 1927

INDUSTRY	NUM- BER OF COR- PORATIONS	PERCENTAGE OF 1923 INCOME					INCOME (Thousands of Dollars)				
		1927	1926	1925	1924	1923	1927	1926	1925	1924	1923
		142	147	128	99	100	\$1,970,650	\$2,041,686	\$1,784,744	\$1,871,387	\$1,388,842
TOTAL .....	275	108	182	159	109	100	208,320	352,236	307,110	211,768	193,428
MINING AND OIL .....	35										
Coal Mining .....	8	27	62	12	45	100	8,010	17,984	8,414	13,132	29,075
Metal Mining .....	10	170	185	158	104	100	49,784	54,026	46,033	30,529	29,101
Oil .....	17	111	207	191	124	100	150,576	280,226	257,063	198,107	136,162
MANUFACTURING .....	132	143	135	117	90	100	884,715	884,068	724,713	553,093	617,018
Food Products and Beverages											
a.e.s.* .....	14	161	158	124	126	100	100,498	98,668	77,629	78,556	62,529
Dairy Products .....	3	247	239	164	110	100	18,489	17,885	12,302	8,209	7,491
Tobacco .....	6	149	146	144	134	100	34,894	34,287	33,887	31,424	23,490
Textiles and Textile Products	8	34	†	22	†	100	7,630	2,703	4,989	5,759	22,278
Clothing .....	6	84	75	81	46	100	9,619	8,668	9,273	5,258	11,510
Leather and Leather Products	3	245†	103†	161†	100†	†	8,308	3,680	6,793	3,598	6,985
Rubber and Rubber Goods .....	8	164	147	307	176	100	83,903	30,227	63,322	36,351	20,630
Lumber and Wood Products .....	3	45	66	57	80	100	3,824	5,708	4,907	6,901	8,676
Paper, Pulp, and Products .....	5	68	71	81	85	100	8,200	8,495	9,691	10,225	12,046
Printing and Publishing .....	2	145	124	100	98	100	3,781	3,233	2,613	2,548	2,606
Chemicals and Allied Sub- stances .....	11	172	164	123	193	100	124,996	118,806	89,464	74,531	72,532
Stone, Clay, and Glass Prod- ucts .....	9	62	82	80	79	100	23,602	31,295	30,449	30,001	38,153

Table II-C (Continued)

INDUSTRY	NUM- BER OF COM- PANIES	PERCENTAGE OF 1923 INCOME						INCOME (Thousands of Dollars)					
		1927	1926	1925	1924	1923		1927	1926	1925	1924	1923	
MANUFACTURING (Continued)													
Automobiles .....	10	232	183	139	67	100		272,662	214,100	163,732	78,430	117,357	
Electrical Equipment .....	7	147	133	125	116	100		85,844	77,885	72,822	68,047	58,444	
Machinery, n.e.s.* .....	5	119	149	109	87	100		14,282	17,861	13,158	10,459	12,004	
Farm Machinery and Equip- ment .....	1	601	554	361	23	100		3,813	3,517	2,294	148	635	
Heating and Plumbing .....	2	87	101	93	61	100		18,750	21,727	19,986	19,163	21,589	
Railway Equipment .....	4	58	82	24	45	100		18,450	26,029	7,546	15,286	31,693	
Metal and Metal Products, Misc. ....	19	94	118	101	74	100		83,246	104,989	89,334	65,873	88,968	
All Other Manufacturing ....	6	83	85	101	121	100		9,429	9,714	11,522	13,844	11,392	
PUBLIC UTILITIES AND RAILROADS													
Rail Transportation .....	23	134	152	131	100	100		672,757	678,201	583,909	488,682	430,428	
Water Transportation .....	4	248	181	280	168	100		293,183	342,708	287,036	220,884	219,230	
Local Transportation, Cartage, Storage .....	8	127	114	107	85	100		4,328	3,154	4,381	2,931	1,746	
Electric Light and Power and Gas Companies .....	26	204	158	144	116	100		13,184	11,802	11,115	8,762	10,364	
Telephone and Telegraph ....	12	171	154	140	113	100		136,110	115,835	95,411	77,039	66,770	
								225,952	204,702	185,466	149,066	132,318	
MISCELLANEOUS													
	35	189	120	114	100	100		204,858	177,181	169,014	147,844	147,968	
Agriculture (Tropical Fruits and Sugar)													
Construction .....	4	34	4	22	92	100		4,974	650	3,137	13,369	14,557	
Trade .....	2	173	159	120	102	100		7,007	6,482	4,856	4,130	4,060	
Service (Hotels, Amusements, etc.) .....	20	143	129	122	98	100		162,981	146,605	138,956	112,110	113,863	
Finance .....	6	163	135	135	115	100		16,487	13,646	13,781	11,714	10,134	
	3	250	183	156	122	100		13,409	9,798	8,334	6,521	5,354	

\* n.e.s.—Not elsewhere specified.

† Net loss.

‡ On basis of 100% for 1924.

Table III-A. Profits of 709 Industrial Corporations for 1925, 1926 and 1927

AS PUBLISHED IN THE BULLETIN OF THE NATIONAL CITY BANK,  
APRIL 1928, PAGE 55

No.	INDUSTRY	(000's omitted)			PER CENT CHANGE	
		1925	1926	1927	1926-27	1925-27
10	Agricultural Implements ..	\$ 35,249	\$ 43,583	\$ 44,664	+ 2.5	+ 26.7
14	Amusements .....	21,862	38,731	39,777	+ 2.7	+ 81.9
15	Apparel .....	10,857	11,011	12,589	+ 14.3	+ 16.0
27	Automobile and Trucks...	275,570	313,465	329,230	+ 5.0	+ 19.5
32	Auto Accessories .....	62,283	54,280	48,549	- 10.8	- 22.1
29	Building Materials .....	69,283	57,382	48,387	- 16.6	- 30.2
33	Chemicals and Drugs.....	96,175	120,384	129,377	+ 7.5	+ 34.5
16	Coal Mining .....	8,749	15,322	9,276	- 40.2	- 6.0
14	Copper Mining .....	24,147	34,994	30,484	- 12.9	- 26.2
23	Cotton Manufacturing ...	3,459	* 1,820	10,490	+ ...	+ 203.3
21	Electrical Equipment .....	72,556	80,974	80,579	+ 0.5	+ 11.1
13	Flour and Bakery.....	72,557	83,734	91,046	+ 8.7	+ 25.5
24	Food Products .....	75,466	87,278	88,698	+ 1.6	+ 17.5
10	Heating and Plumbing.....	27,014	27,892	26,561	- 4.8	- 1.7
38	Iron and Steel.....	191,322	238,696	183,498	- 23.1	- 4.1
11	Leather and Shoes.....	24,304	20,276	31,920	+ 57.2	+ 31.4
33	Machinery .....	41,441	47,779	38,780	- 18.8	- 6.4
10	Meat Packing .....	34,825	32,701	14,555	- 55.4	- 58.1
65	Merchandising .....	167,141	173,593	189,013	+ 8.9	+ 13.1
30	Non-ferrous Metals (Exc. Copper) .....	86,069	90,845	81,019	- 10.8	- 5.9
24	Office and Home Appliances	53,617	59,666	62,706	+ 5.1	+ 16.9
11	Paper and Products .....	8,287	6,652	6,759	+ 1.6	+ 18.4
54	Petroleum .....	339,007	394,505	212,405	- 46.2	- 37.3
15	Printing and Publishing..	25,131	25,364	29,775	+ 17.4	+ 18.5
17	Railway Equipment .....	25,485	47,592	37,444	- 21.3	- 46.9
15	Rubber .....	72,874	34,935	50,813	+ 45.6	+ 30.3
9	Shipping .....	7,407	5,441	8,381	+ 54.0	+ 13.2
9	Silk Manufacturing .....	10,392	6,465	4,858	- 24.8	- 53.3
20	Sugar .....	12,494	6,196	19,684	+ 218.0	+ 57.5
24	Tobacco .....	103,575	118,278	117,743	+ 3.9	+ 13.7
5	Woolen Manufacturing ...	2,033	* 1,997	8,299	+ ...	+ 62.3
38	Miscellaneous .....	61,321	61,521	65,642	+ 6.7	+ 7.0
709	Grand Total .....	\$2,121,967	\$2,331,526	\$2,148,001	- 7.9	+ 1.2
	General Motors Corp.....	126,617	194,645	235,105	+ 20.8	+ 85.7
708	Total Excluding General Motors .....	\$1,995,350	\$2,136,881	\$1,912,896	- 10.5	- 4.1

\* Deficit

Table III-B. Net Earnings  
(AFTER ALL DEDUCTIONS BUT BEFORE DIVIDENDS)  
OF 171 INDUSTRIALS IN THE UNITED STATES  
Compiled by Federal Reserve Bank of Cleveland  
Published by courtesy of E. R. Fancher, Governor  
(In thousands of dollars)

	1927	1928	1925	1924	1923	1922	1921	1920	1919
171 Total .....	1,244,895	1,291,797	1,174,282	894,148	985,694	669,656	130,050	.....	.....
7 Chemicals .....	48,779	43,467	33,502	28,680	31,216	22,608	11,365	.....	.....
10 Clothing, Textile ..	11,797	8,675	10,656	7,992	13,647	18,098	4,334	7,446	13,706
10 By Equipment .....	29,608	39,999	18,731	28,981	51,879	23,127	15,717	32,818	38,818
15 Food, Packing .....	116,542	124,886	113,497	105,814	103,655	75,305	8,619	71,690	85,424
6 Mining .....	33,596	44,696	35,358	26,036	20,486	15,125	6,450	13,823	23,820
12 Motor .....	335,973	300,947	238,707	125,273	150,172	121,881	37,450*	89,441	111,938
General Motors .....	235,105	186,231	116,016	51,623	72,009	54,474	38,631*	37,750	60,005
11 Others .....	100,868	114,716	122,691	73,650	78,163	67,407	1,181	51,691	51,933
14 Motor Accessory ..	24,514	34,073	36,972	28,919	30,228	28,808	4,891	15,625	.....
9 Oil .....	33,773	99,072	92,364	54,409	24,435	62,496	19,087	62,475	42,626
8 Rubber .....	44,886	15,651	72,854	35,748	22,629	27,333	18,166*	19,659	68,281
7 Shoes, Leather .....	27,591	19,698	22,171	18,970	9,286	19,156	4,869*	27,355*	.....
13 Steel .....	149,939	202,307	156,439	131,108	180,316	57,538	41,980	186,057	134,493
U. S. Steel .....	87,845	116,667	90,603	85,067	108,707	39,653	36,617	109,694	76,795
12 Others .....	62,094	85,640	65,836	46,041	71,609	17,885	5,363	76,363	57,698
11 Stores, Mail Order..	117,173	100,467	95,035	79,189	67,821	50,880	2,448	34,434	51,046
7 Sugar .....	10,540	6,855	10,299	18,243	25,065	10,156	33,914*	44,778	38,540
11 Tobacco .....	88,554	82,915	79,132	71,951	65,392	67,397	57,746	50,535	46,074
31 Misc. ....	171,650	168,089	158,565	132,835	139,467	79,728	46,943	128,287	114,371

\* Deficit.

Table IV-A. Summary Comparison of Corporation Income Tax Returns in the United States

1916-1925

YEAR	ALL CORPORATIONS FILING RETURNS		CORPORATIONS REPORTING NET INCOME			CORPORATIONS REPORTING NO NET INCOME		
	Total Number	Income in Excess of Deficit (000's omitted)	Number Reporting Net Income	Per Cent Reporting Net Income	Net Income (000's omitted)	Number Reporting No Net Income	Per Cent Reporting No Net Income	Deficit (000's omitted)
1916	341,253	\$ 8,109,005	206,984	60.65	\$ 8,765,909	134,269	39.35	\$ 656,904
1917	351,426	10,100,753	232,079	66.04	10,730,360	119,347	33.96	629,607
1918	317,579	7,671,739	202,061	63.63	8,361,511	115,518	36.37	689,772
1919	320,198	8,415,872	209,634	65.47	9,411,418	110,564	34.53	995,546
1920	345,595	5,873,231	203,233	58.81	7,902,655	142,362	41.19	2,029,424
1921	356,397	457,829	171,239	48.05	4,336,048	185,158	51.95	3,878,219
1922	382,883	4,770,035	212,535	55.51	6,963,811	170,348	44.49	2,193,776
1923	398,933	6,307,974	233,339	58.49	8,321,529	165,594	41.51	2,013,555
1924	417,421	5,362,726	236,389	56.63	7,586,652	181,032	43.37	2,223,926
1925	430,072	7,621,056	252,334	58.67	9,583,684	177,738	41.33	1,962,628

Source: Treasury Department, United States Internal Revenue, Statistics of Income from Returns of Net Income for 1925, page 143.

Table IV-B. Income of Corporations in United States by Industries

NUMBER OF RETURNS AND INCOME OR DEFICIT REPORTED

BY YEARS 1920-1925

INDUSTRY	NUMBER OF RETURNS				INCOME OR DEFICIT ('000's omitted)				
	Total	Report- ing Deficit	Report- ing Profits \$1,000- Over	Report- ing Profits Under \$1,000-	Profits in Excess of Deficit	Deficits	Total Profits	Profits of \$1,000,000 and Over	Profits of Less than \$1,000,000
All Industries .....	1920 345,505	142,862	203,233	996	202,237	\$5,873,231	\$2,029,424	\$7,902,655	\$3,830,037
	1921 356,397	185,158	171,239	531	170,708	457,829	3,878,219	4,336,048	1,889,012
	1922 382,883	170,348	212,535	845	211,690	4,770,976	6,963,811	3,127,066	3,836,145
	1923 398,933	165,594	233,339	1,026	232,313	6,307,974	2,013,555	8,321,529	3,990,571
	1924 417,421	181,032	236,389	901	235,488	5,362,726	2,223,926	3,658,047	3,928,605
	1925 430,072	177,738	252,334	1,113	251,221	7,631,056	1,962,628	4,973,354	4,609,880
Agriculture and Related Industries .....	1920 9,186	5,312	3,874	7	3,867	5,340	66,140	71,480	46,027
	1921 8,724	5,578	3,146	...	3,145	47,845	88,563	40,718	40,718
	1922 9,092	5,092	4,000	3	3,997	6,809	56,091	62,900	40,789
	1923 9,800	5,446	3,914	4	3,910	42,271	49,930	92,201	46,100
	1924 9,758	5,228	4,530	5	4,525	1,732	62,498	64,230	21,360
	1925 9,904	5,242	4,662	6	4,656	17,647	59,215	76,862	30,507
Mining and Quarrying..	1920 17,534	10,601	6,933	107	6,826	525,569	176,505	702,074	354,511
	1921 17,660	13,295	4,365	30	4,335	229,356	414,489	185,134	104,994
	1922 17,093	10,963	6,130	42	6,088	5,981	280,456	286,437	101,006
	1923 18,509	13,234	5,175	44	5,131	50,688	334,254	283,566	124,805
	1924 18,453	13,560	4,893	37	4,856	66,949	307,091	240,142	119,300
	1925 19,163	13,676	5,488	68	5,420	243,643	209,957	453,600	204,071
All Manufacturing ....	1920 78,171	28,746	49,425	569	48,856	3,232,278	834,146	4,116,424	2,238,455
	1921 79,745	42,718	37,030	230	36,800	1,21,046	1,898,831	1,777,735	800,979
	1922 82,468	33,788	48,687	458	48,239	2,641,007	813,413	3,454,420	1,747,917
	1923 86,199	31,404	53,795	598	53,197	8,570,888	701,012	4,271,900	2,324,861
	1924 86,803	35,461	51,342	480	50,882	2,763,472	832,203	3,595,675	1,986,534
	1925 88,674	34,537	54,137	541	53,596	3,701,102	682,255	4,383,357	2,546,478
Food Products, Bev- erages and Tobacco	1920 13,713	6,167	7,557	63	7,488	220,952	183,895	404,847	244,550
	1921 12,777	5,570	7,207	39	7,168	10,014	309,102	319,176	161,814
	1922 14,037	5,729	8,308	99	8,209	287,366	160,306	447,671	251,359
	1923 14,133	5,486	8,646	73	8,563	383,748	124,170	506,924	291,176
	1924 14,193	5,362	8,830	77	8,753	441,137	95,715	536,852	304,542
	1925 14,722	5,419	9,303	73	9,230	441,960	91,512	533,472	304,928

Source: Statistics of Income from Returns of Net Income, Treasury Department, U. S. Internal Revenue.

Table IV-B. Income of Corporations in United States by Industries  
(Continued)

INDUSTRY	NUMBER OF RETURNS				INCOME OR DEFICIT (000's omitted)				
	Total	Report- ing Deficit	Report- ing Profits	Report- ing Profits Over \$1,000, 000 and Under \$1,000, 000	Profits in Excess of Deficit	Deficits	Total Profits	Profits of \$1,000,000 and Over	Profits of Less than \$1,000,000
Textiles and Textile Products .....	10,121	4,576	5,545	87	5,458	\$ 201,967	\$ 458,613	\$ 190,136	\$ 268,477
	10,872	5,560	5,312	50	5,262	137,917	327,356	123,509	203,847
	11,425	4,452	6,973	88	6,885	450,796	535,107	220,774	314,333
	11,771	4,093	7,678	91	7,587	481,568	563,412	137,635	425,777
	12,229	5,393	6,836	49	6,787	188,824	816,926	115,065	201,863
1925	12,271	4,767	7,504	59	7,445	298,342	413,115	151,322	261,793
Leather and Leather Products .....	2,162	932	1,230	4	1,226	-42,894	61,028	15,370	45,649
	2,184	1,203	981	8	1,973	-48,845	57,064	19,901	37,163
	2,284	954	1,330	10	1,320	63,830	83,841	32,203	51,638
	2,303	982	1,321	10	1,311	96,262	36,126	23,751	42,637
	2,428	1,087	1,341	8	1,333	38,443	70,319	23,536	40,783
1925	2,359	986	1,373	11	1,362	47,128	76,023	32,514	43,509
Rubber and Rubber Goods .....	671	392	279	5	274	-4,897	26,678	14,530	12,148
	641	445	196	...	106	-96,480	101,532	6,102	5,102
	593	309	284	7	277	17,367	24,563	23,769	16,161
	607	384	273	13	260	24,361	45,924	34,037	11,887
	638	313	325	11	314	41,555	56,900	41,494	15,406
1925	638	289	349	15	334	109,025	122,966	100,613	22,353
Lumber and Wood Products .....	7,265	1,965	5,300	42	5,258	294,100	321,269	74,027	247,242
	6,733	3,749	2,984	...	2,984	-49,709	70,511	21,564	70,511
	6,911	2,366	4,545	14	4,531	159,714	207,996	186,632	121,360
	7,382	2,132	5,250	35	5,215	299,050	299,050	63,997	235,053
	7,663	2,913	4,750	11	4,739	121,115	178,869	18,993	160,776
1925	7,333	2,976	4,657	16	4,641	147,200	200,316	30,100	170,216
Paper, Pulp and Prod- ucts .....	1,693	344	1,349	48	1,301	237,581	241,616	124,026	117,590
	1,676	946	730	15	725	-4,297	44,832	12,187	32,645
	1,769	683	1,086	11	1,075	61,616	84,935	23,952	60,983
	1,815	575	1,240	16	1,224	109,977	109,909	35,468	74,441
	1,886	682	1,204	11	1,193	74,313	92,674	27,637	65,037
1925	1,940	652	1,288	22	1,266	99,049	111,186	46,488	64,698

Table IV-B. Income of Corporations in United States by Industries  
(Continued)

INDUSTRY	NUMBER OF RETURNS					INCOME OR DEFICIT (000's omitted)					
	Total	Report- ing Deficit	Report- ing Profits	Report- ing Profits Under \$1,000, 000 and Over	Report- ing Profits Under \$1,000, 000	Profits in Excess of Deficit	Deficits	Total Profits	Profits of \$1,000,000 and Over	Profits of Less than \$1,000,000	
Printing and Publish- ing .....	1920	8,088	1,695	6,393	15	6,378	\$ 149,451	\$ 13,709	\$ 163,160	\$ 35,497	\$ 127,663
	1921	8,432	3,046	5,386	17	5,369	97,477	26,680	124,157	33,164	90,693
	1922	8,710	2,989	5,721	24	5,747	161,695	23,020	184,715	72,269	112,446
	1923	9,223	3,040	6,183	24	6,159	142,820	28,027	165,947	57,452	108,495
	1924	9,618	3,840	6,278	26	6,252	147,517	28,465	176,972	64,023	111,949
1925	9,920	3,897	6,523	25	6,498	161,404	29,505	190,909	63,062	127,847	
Chemicals and Allied Substances .....	1920	5,826	2,779	3,047	44	3,003	344,930	36,440	441,870	318,288	123,082
	1921	5,924	3,422	2,502	30	2,472	25,836	132,881	158,217	86,191	72,020
	1922	6,117	2,605	3,512	62	3,450	895,063	66,158	461,221	816,124	145,097
	1923	6,317	2,845	3,472	62	3,410	325,426	94,109	419,584	881,002	138,582
	1924	6,601	2,961	3,640	66	3,584	389,875	76,309	466,184	827,144	139,040
1925	6,962	3,911	3,951	69	3,882	540,925	82,352	623,277	455,841	167,436	
Stone, Clay and Glass Products .....	1920	3,662	1,001	2,661	21	2,640	142,886	8,287	151,173	62,329	88,844
	1921	3,681	1,683	1,998	8	1,990	43,497	26,260	69,757	18,691	51,066
	1922	3,890	1,431	2,459	16	2,443	109,106	16,586	125,692	41,866	83,826
	1923	4,201	1,321	2,880	28	2,852	173,470	14,374	187,843	72,835	115,009
	1924	4,356	1,621	2,735	27	2,708	144,460	17,943	162,403	66,253	96,150
1925	4,454	1,701	2,753	30	2,723	163,701	17,846	181,547	85,566	95,981	
Metal and Metal Products .....	1920	15,131	4,996	10,135	180	9,955	1,274,890	136,757	1,411,647	922,521	489,126
	1921	15,536	10,068	5,468	51	5,417	228,635	666,002	437,867	275,751	161,616
	1922	15,374	7,477	8,897	113	8,284	634,916	272,040	906,956	571,777	335,179
	1923	16,240	6,072	10,168	192	9,976	1,249,415	178,081	1,427,496	970,825	456,671
	1924	20,170	8,943	11,227	159	11,068	1,840,597	244,779	1,840,597	901,606	438,991
1925	21,529	8,769	12,760	202	12,558	1,855,808	201,445	1,756,753	1,211,422	545,331	
All Other Manufacturing	1920	9,834	3,899	5,935	60	5,875	373,812	61,710	435,022	237,172	197,850
	1921	10,292	6,026	4,266	21	4,245	7,341	171,538	164,197	67,704	96,493
	1922	10,325	4,844	5,981	44	5,937	283,539	86,926	370,465	169,960	200,505
	1923	11,187	4,523	6,664	54	6,610	383,877	89,543	473,420	244,682	228,738
	1924	6,772	2,846	3,926	25	3,901	140,414	57,561	197,975	89,140	108,836
1925	6,246	2,570	3,676	19	3,657	137,059	36,783	173,792	64,621	109,171	

Table IV-B. Income of Corporations in United States by Industries  
(Continued)

INDUSTRY	NUMBER OF RETURNS					INCOME OR DEFICIT ('000's omitted)				
	Total	Report- ing Deficit	Report- ing Profits	Report- ing Profits Under \$1,000, 000 and Over	Report- ing Profits Under \$1,000, 000 and Over	Profits in Excess of Deficit	Deficits	Total Profits	Profits of \$1,000,000 and Over	Profits of Less than \$1,000,000
Construction .....	1920	9,060	2,950	7,010	13	6,997	85,843	113,552	37,213	70,339
	1921	10,361	4,320	6,041	7	6,034	15,828	67,335	18,755	53,580
	1922	11,370	4,373	6,997	4	6,993	39,195	91,724	7,321	84,403
	1923	12,551	4,400	8,151	5	8,145	69,195	112,004	13,641	98,363
	1924	13,176	4,475	8,701	7	8,694	90,694	132,704	16,437	116,267
1925	15,338	5,637	9,701	7	9,694	113,145	48,346	156,491	15,103	141,388
Transportation and Other Public Utilities .....	1920	20,539	7,677	12,922	116	12,805	678,626	829,131	617,234	211,897
	1921	19,105	7,274	11,831	120	11,711	498,503	821,872	630,054	191,818
	1922	20,511	6,821	13,690	141	13,549	782,783	979,263	722,507	256,756
	1923	21,113	6,844	14,269	177	14,092	1,131,760	1,257,410	978,687	278,723
	1924	22,431	7,866	14,565	189	14,376	1,034,259	1,282,012	909,183	262,579
1925	23,613	8,751	14,862	193	14,669	1,353,948	134,745	1,468,693	1,196,153	272,540
Trade .....	1920	78,985	28,607	52,278	63	52,215	571,691	911,173	183,101	728,072
	1921	88,379	45,370	42,809	62	42,757	—54,883	671,945	127,401	444,344
	1922	93,683	35,392	58,291	83	58,008	935,319	818,693	224,844	789,168
	1923	100,946	32,460	68,486	93	68,393	883,129	1,197,926	262,382	935,544
	1924	106,323	37,211	69,112	87	68,025	802,069	296,517	265,300	833,286
1925	109,588	37,678	71,910	100	71,810	996,569	287,506	1,254,046	310,038	944,008
Public Service (Profes- sional, Amusements, Hotels, etc.) .....	1920	17,490	5,576	11,914	11	11,903	116,292	145,491	21,100	124,391
	1921	19,103	8,409	10,694	7	10,687	58,934	104,873	10,444	94,429
	1922	23,145	9,651	13,494	11	13,483	88,752	148,367	21,125	127,242
	1923	25,114	9,632	15,482	16	15,466	129,227	188,368	25,979	162,389
	1924	26,320	10,825	15,495	20	15,475	135,515	202,165	43,599	158,566
1925	28,981	12,410	16,571	28	16,543	174,200	72,226	246,426	63,799	182,627
Finance, Banking, In- surance, etc. ....	1920	78,902	23,418	55,484	100	55,384	639,368	933,304	321,122	612,182
	1921	82,858	28,736	54,122	78	53,880	363,166	739,297	201,070	538,227
	1922	91,105	32,459	58,646	97	58,549	490,174	887,835	268,215	620,620
	1923	96,772	34,118	62,654	83	62,571	537,270	868,083	182,417	675,466
	1924	104,761	37,672	67,089	93	66,996	534,627	996,124	228,416	766,708
1925	115,947	42,701	73,246	167	73,079	1,067,604	456,219	1,523,823	512,370	1,011,453

Table IV-B. Income of Corporations in United States by Industries  
(Continued)

INDUSTRY	NUMBER OF RETURNS					INCOME OR DEFICIT (000's omitted)				
	Total	Report- ing Deficit	Report- ing Profits	Report- ing Profits \$1,000 and Over	Report- ing Profits Under \$1,000,- 000	Profits in Excess of Deficit	Deficits	Total Profits	Profits of \$1,000,000 and Over	Profits of Less than \$1,000,000
Combinations (Predomi- nant Industry Not As- ertainable) .....	1920	3,108	1,672	1,436	1,429	32,376	34,527	66,903	31,848	35,035
	1921	2,879	1,678	1,201	1,201	-38,421	65,510	27,089	10,361	16,728
	1922	2,116	1,088	1,078	6	20,284	18,566	88,850	21,619	17,231
	1923	3,419	1,706	1,713	6	26,725	24,346	50,071	21,698	28,478
	1924	3,957	2,295	1,662	3	7,481	18,534	26,015	7,667	18,348
	1925	6,320	3,563	1,757	3	6,182	16,204	20,386	4,936	15,450
Nominal Concerns (In- active, etc.) .....	1920	31,700	29,803	1,957	....	-63,651	76,773	13,122	....	13,122
	1921	27,780	27,780	....	....	-16	16	....	....	....
	1922	80,288	80,271	12	....	-271	803	1	....	1
	1923	26,250	26,250	....	....	-803	73	....	....	....
	1924	26,439	26,439	....	....	-73	....	....	....	....
	1925	13,544	13,544	....	....	-1,956	1,956	....	....	....

Table IV-C. Income of Corporations in United States by Industries  
PERCENTAGES OF RETURNS AND INCOME OR DEFICIT REPORTED,  
ON BASIS OF 100% FOR 1923

(Computed from Data in Table IV-B.)

INDUSTRY	NUMBER OF RETURNS					INCOME OR DEFICIT				
	Total	Report- ing Deficit	Report- ing Profits	Report- ing Profits Under \$1,000 and Over	Report- ing Profits Under \$1,000	Profits in Excess of Deficit	Deficits	Total Profits	Profits of \$1,000,000 and Over	Profits of Less than \$1,000,000
All Industries .....	1920	87%	86%	97%	87%	93%	101%	95%	96%	94%
	1921	89	112	74	73	7	102	52	47	56
	1922	96	103	91	73	76	109	84	78	89
	1923	100	100	100	100	100	100	100	100	100
	1924	105	109	101	101	85	110	100	92	91
Agriculture and Related Industries .....	1920	108	107	108	108	121	98	115	125	107
	1921	98	98	99	99	13	132	78	55	100
	1922	93	103	80	81	..*	177	44	48	88
	1923	97	94	102	102	16	112	68	100	88
	1924	100	100	100	100	100	100	100	100	100
Mining and Quarrying..	1920	104	96	116	116	4	125	70	46	98
	1921	106	96	119	119	42	119	83	66	100
	1922	95	80	134	133	...	53	248	284	219
	1923	95	99	68	85	...	124	65	64	65
	1924	92	82	119	119	...	84	101	81	117
All Manufacturing ....	1920	100	100	100	100	...	100	100	100	100
	1921	99	102	95	95	...	92	85	96	76
	1922	103	103	106	106	...	63	160	236	100
	1923	92	91	95	92	92	119	96	96	96
	1924	84	136	69	69	..*	271	42	84	50
Food Products, Bev- erages and Tobacco	1920	97	108	77	91	74	116	81	75	88
	1921	100	100	100	100	100	100	100	100	100
	1922	102	113	95	96	77	119	84	85	82
	1923	104	101	90	101	104	97	103	110	94
	1924	97	112	87	86	58	148	80	84	74
Food Products, Bev- erages and Tobacco	1920	97	120	83	83	8	249	63	55	73
	1921	100	104	96	95	78	121	68	86	91
	1922	100	100	100	100	100	100	100	100	100
	1923	102	98	105	105	115	77	106	105	107
	1924	104	99	107	100	115	74	105	104	106

Table IV-C. Income of Corporations in United States by Industries  
(Continued)

Percentages on Basis of 100% for 1923.

INDUSTRY	NUMBER OF RETURNS					INCOME OR DEFICIT				
	Total	Report- ing Deficit	Report- ing Profits	Report- ing Profits \$1,000 - Over	Report- ing Profits Under \$1,000 - 000	Profits in Excess of Deficit	Deficits	Total Profits	Profits of \$1,000,000 and Over	Profits of Less than \$1,000,000
Textiles and Textile Products .....	1920	86%	113%	72%	98%	59	232%	81%	138%	63%
	1921	92	135	69	55	28	264	58	90	48
	1922	97	109	91	97	93	109	95	160	74
	1923	100	100	100	100	100	100	100	100	100
	1924	104	132	89	54	26	262	56	84	47
1925	104	117	98	65	98	61	160	73	110	61
Leather and Leather Products .....	1920	94	95	93	40	...	285	84	52	107
	1921	95	122	74	80	...	291	79	67	87
	1922	99	107	101	100	176	69	122	108	132
	1923	100	100	100	100	100	100	100	100	100
	1924	105	111	102	80	108	88	97	99	106
1925	102	100	104	110	104	130	80	105	109	102
Rubber and Rubber Goods .....	1920	111	117	102	38	...	146	58	43	102
	1921	106	133	72	...	...	411	11	...	43
	1922	98	82	104	54	71	114	91	76	136
	1923	100	100	100	100	100	100	100	100	100
	1924	105	84	119	86	171	71	124	122	130
1925	105	87	128	116	129	447	65	268	296	188
Lumber and Wood Products .....	1920	98	92	101	120	110	83	107	116	105
	1921	91	176	57	...	...	369	23	...	30
	1922	94	111	87	40	60	148	69	33	79
	1923	100	100	100	100	100	100	100	100	100
	1924	104	137	90	31	45	175	60	28	68
1925	103	140	89	46	89	55	163	67	47	72
Paper, Pulp and Prod- ucts .....	1920	93	60	109	300	250	27	220	350	158
	1921	92	165	59	31	...	329	41	34	44
	1922	97	119	88	69	65	160	76	67	81
	1923	100	100	100	100	100	100	100	100	100
	1924	104	119	97	69	78	123	84	78	87
1925	107	113	104	138	103	104	81	101	131	87

Table IV-C. Income of Corporations in United States by Industries  
(Continued)

Percentages on Basis of 100% for 1923.

INDUSTRY	NUMBER OF RETURNS					INCOME OR DEFICIT				
	Total	Report- ing Deficit	Report- ing Profits	Report- ing Profits \$1,000- Over	Report- ing Profits Under \$1,000	Profits in Excess of Deficit	Deficits	Total Profits	Profits of \$1,000,000 and Over	Profits of Less than \$1,000,000
Printing and Publish- ing .....	1920	88%	50%	103%	103%	105%	58%	99%	61%	117%
	1921	91	100	87	87	69	113	75	58	73
	1922	94	97	93	93	114	97	112	125	103
	1923	100	100	100	100	100	100	100	100	100
	1924	101	110	108	102	113	121	106	111	102
Chemicals and Allied Substances .....	1920	92	98	88	88	106	102	105	103	89
	1921	93	120	72	71	8	141	88	81	52
	1922	97	91	101	100	121	70	110	112	105
	1923	100	100	100	100	100	100	100	100	100
	1924	105	104	105	90	120	81	111	116	100
Stone, Clay and Glass Products .....	1920	87	76	92	75	82	58	81	85	77
	1921	88	127	69	29	25	133	87	26	44
	1922	93	108	85	57	63	115	67	58	73
	1923	100	100	100	100	100	100	100	100	100
	1924	104	123	95	95	83	125	86	91	84
Metal and Metal Products .....	1920	106	129	96	107	94	124	97	117	83
	1921	93	82	100	94	102	77	99	94	109
	1922	95	166	54	27	51	37	31	28	36
	1923	98	123	83	59	51	133	63	58	74
	1924	100	100	100	100	100	100	100	100	100
All Other Manufacturing	1920	124	147	111	83	88	137	94	92	97
	1921	132	144	126	105	125	113	123	124	121
	1922	88	86	89	111	97	69	92	97	86
	1923	92	133	64	89	74	132	36	27	42
	1924	97	107	80	82	100	97	100	69	88
All Other Manufacturing	1925	100	100	100	100	100	100	100	100	100
	1926	61	63	59	46	37	64	42	36	48
	1927	56	57	55	35	36	41	37	26	48

Table IV-C. Income of Corporations in United States by Industries  
(Continued)

Percentages on Basis of 100% for 1923.

INDUSTRY	NUMBER OF RETURNS					INCOME OR DEFICIT				
	Total	Report- ing Deficit	Report- ing Profits	Report- ing Profits \$1,000- Over	Report- ing Profits Under \$1,000-	Profits in Excess of Deficit	Deficits	Total Profits	Profits of \$1,000,000 and Over	Profits of Less than \$1,000,000
Construction .....	1920	79%	67%	80%	260%	86%	123%	101%	27%	77%
	1921	82	98	74	140	74	120	60	101	54
	1922	91	89	86	80	86	123	82	54	86
	1923	100	100	100	100	100	100	100	100	100
	1924	105	102	107	140	107	98	118	120	118
Transportation and Other Public Utilities .....	1920	98	112	91	66	91	120	66	63	76
	1921	91	105	83	68	83	257	65	64	69
	1922	97	100	95	80	96	156	78	74	92
	1923	100	100	100	100	100	100	100	100	100
	1924	108	115	102	107	102	109	99	99	94
Trade .....	1920	112	128	104	109	104	107	117	122	98
	1921	78	82	77	68	77	128	76	70	78
	1922	88	140	63	56	63	237	48	49	47
	1923	96	111	98	89	88	120	85	86	84
	1924	100	100	100	100	100	100	100	100	100
Public Service (Profes- sional, Amusements, Hotels, etc.) .....	1920	105	116	106	94	100	112	92	104	89
	1921	109	116	106	108	104	109	105	118	101
	1922	70	52	77	69	77	49	77	81	77
	1923	76	87	68	44	69	78	56	40	58
	1924	32	100	87	69	87	104	73	81	78
Finance, Banking, In- surance, etc. ....	1920	100	100	100	100	100	100	100	100	100
	1921	105	112	100	125	100	113	107	108	100
	1922	115	129	107	175	107	122	131	245	113
	1923	82	69	89	120	88	72	108	167	91
	1924	86	84	94	94	86	88	85	104	80
	1920	94	96	94	117	94	97	102	134	93
	1921	100	100	100	100	100	100	100	100	100
	1922	108	110	107	112	107	110	100	100	100
	1923	108	112	107	201	117	111	115	119	114
	1924	120	125	117		238		176	266	150

Table IV-D. Percentage of Net Profits to Total Receipts  
(After Deducting Income Tax)

STATISTICS OF INCOME—U. S. INTERNAL REVENUE, TREASURY DEPARTMENT

	1925	1924	1923	1922	1921	1920
ALL INDUSTRIAL DIVISIONS	5.96%	4.94%	5.63%	5.12%	.27%	3.60%
AGRICULTURE AND RELATED INDUSTRIES .....	1.75	.06	4.71	.65	7.96	1.63
MINING AND QUARRYING ..	5.38	.84	.19	1.88	6.72	5.71
TOTAL MANUFACTURING...	5.85	4.91	6.07	5.65	1.23	4.12
Food Prod., Beverages, Tobacco, etc. ....	3.10	3.46	3.60	3.18	.67	1.06
Textiles and Textile Products .....	3.48	1.54	5.67	6.08	1.24	2.08
Leather and Leather Products .....	2.66	2.24	1.93	3.82	4.27	3.05
Rubber and Rubber Goods	7.93	3.31	2.13	1.73	15.26	.83
Lumber and Wood Products .....	4.54	3.92	8.24	6.02	3.30	6.50
Paper, Pulp, and Products .....	6.03	4.96	6.07	4.82	1.19	9.19
Printing and Publishing	6.70	6.80	6.68	8.07	4.08	6.09
Chemicals and Allied Substances .....	8.95	7.52	6.59	7.59	.10	4.45
Stone, Clay, and Glass Products .....	9.73	9.55	11.42	8.35	3.29	8.03
Metal and Metal Products .....	7.42	6.28	6.92	5.94	3.25	6.49
All Other Mfg.....	6.13	5.64	7.36	6.50	1.11	6.46
CONSTRUCTION .....	4.64	3.80	2.99	2.08	.12	2.34
TRANSPORTATION AND OTHER PUBLIC UTILITIES	12.69	12.66	12.03	9.65	not given	
TRADE .....	2.26	2.06	2.64	2.19	.55	1.20
PUBLIC SERVICE, PROFESSIONAL (Hotels, etc.)...	5.75	4.91	4.95	3.71	2.25	4.34
FINANCE, BANKING, INSURANCE, ETC. ....	12.57	11.24	10.04	9.39	3.97	6.20
COMBINATIONS. PREDOMINANT INDUSTRY (not ascertainable) .....	4.27	2.98	5.45	5.58	5.29	1.86

Table V. Statistics of Manufacturing Industries  
 COMPARING NUMBER OF ESTABLISHMENTS, NUMBER OF WAGE EARNERS, AND PROPORTION OF VALUE OF PRODUCTS  
 REPRESENTED BY MATERIALS AND WAGES

YEAR	Number of Es- tablish- ments*	Wage Earners (Av. Number) (000's omitted)	EXPRESSED IN MILLIONS OF DOLLARS					EXPRESSED AS PERCENTAGES OF VALUE OF PRODUCTS				
			Value of Prod- ucts	Cost of Mate- rials	Value Added by Mann- ufacture	Wages	Value Over Wages and Mate- rials	Cost of Mate- rials	Value Added by Mann- ufacture	Wages	Value Over Wages and Mate- rials	
1925 1923 1921	187,980 185,580 195,555	8,384 8,708 6,937	62,714 60,258 43,427	35,936 34,480 25,155	26,778 26,778 18,272	10,730 10,989 8,193	16,048 14,779 10,079	57% 57% 58	43% 43 42	17% 18 19	26% 25 23	
1925 1923 1921	48,113 51,118 51,401	665 672 618	10,419 9,227 8,041	7,749 7,066 5,957	2,670 2,461 2,084	794 785 737	1,876 1,676 1,347	74 73 74	26 27 26	8 9 9	18 18 17	
1925 1923 1921	2,623 3,672 4,372	132 145 150	1,091 1,044 1,048	426 519 608	665 528 440	112 120 121	553 408 319	39 49 58	61 51 42	10 12 12	51 39 30	
1925 1923 1921	24,338 26,767 25,960	1,627 1,715 1,510	9,123 9,463 6,957	5,348 5,395 3,801	3,775 4,068 3,166	1,654 1,744 1,472	2,121 2,324 1,684	59 57 55	41 43 45	18 18 21	23 25 24	
1925 1923 1921	21,922 21,674 21,893	921 932 703	3,688 3,638 2,457	1,725 1,666 1,198	1,963 1,907 1,259	978 962 670	985 1,005 589	47 46 49	53 54 51	26 27 27	27 28 24	
1925 1923 1921	4,264 4,868 4,813	315 346 280	1,767 1,880 1,544	1,015 1,083 934	752 797 610	356 389 314	396 408 296	58 58 61	42 42 39	20 20 20	22 22 19	
1925 1923 1921	498 529 496	141 138 103	1,255 958 705	719 501 378	536 457 327	191 182 124	345 275 203	57 52 53	43 48 47	15 19 18	28 29 19	
1925 1923 1921	26,553 25,799 25,577	537 527 467	4,144 3,772 3,150	1,614 1,544 1,332	2,530 2,228 1,818	806 743 637	1,724 1,485 1,181	39 41 42	61 59 58	19 20 20	42 39 38	

Table V. Statistics of Manufacturing Industries  
(Continued)

YEAR	Number of Es- tablish- ments*	Wage Earners (Av. Number) (000's omitted)	EXPRESSED IN MILLIONS OF DOLLARS					EXPRESSED AS PERCENTAGES OF VALUE OF PRODUCTS				
			Value of Prod- ucts	Cost of Mate- rials	Value Added by Manu- facture	Wages	Value Over Wages and Mate- rials	Cost of Mate- rials	Value Added by Manu- facture	Wages	Value Over Wages and Mate- rials	
1925	8,871	381	6,438	4,185	2,258	500	1,747	65	85	8	27	
1923	8,882	384	5,706	3,680	2,026	501	1,525	64	86	9	27	
1921	8,894	314	4,594	3,111	1,483	404	1,079	68	32	9	23	
1925	8,478	358	1,640	603	1,037	407	570	37	63	28	35	
1923	8,317	352	1,563	573	990	454	536	37	63	29	34	
1921	8,347	253	1,033	428	605	307	298	41	59	30	29	
1925	6,068	851	6,461	3,734	2,727	1,284	1,443	58	42	20	22	
1923	6,358	893	6,829	4,153	2,676	1,325	1,351	61	39	19	20	
1921	6,255	572	3,456	2,140	1,316	731	585	62	38	21	17	
1925	6,924	275	2,834	1,947	887	381	506	69	31	13	18	
1923	7,433	297	2,634	1,767	867	394	473	67	32	15	18	
1921	7,801	212	1,407	886	521	256	265	63	37	18	19	
1925	11,807	859	5,020	1,985	3,035	1,225	1,810	40	60	24	36	
1923	12,147	908	4,728	1,802	2,886	1,254	1,582	40	60	27	33	
1921	12,395	662	3,235	1,361	1,874	533	1,041	42	58	26	32	
1925	2,778	560	5,452	3,389	2,063	908	1,155	62	38	17	21	
1923	3,873	606	5,833	3,494	1,939	904	975	64	36	18	18	
1921	4,273	406	3,018	1,803	1,215	591	624	60	40	19	21	
1925	2,363	458	1,333	504	769	608	101	42	58	50	8	
1923	2,348	523	1,520	631	889	773	116	41	59	51	8	
1921	2,326	418	1,267	507	760	672	88	40	60	53	7	
1925	461	47	232	99	133	93	70	43	57	27	30	
1923	535	58	232	124	109	75	84	44	56	26	30	
1921	600	45	218	95	118	51	64	45	55	25	30	
1925	11,234	262	1,816	824	982	327	645	46	54	19	25	
1923	11,310	272	1,684	794	890	321	556	47	53	20	23	
1921	10,852	223	1,300	614	686	268	418	47	53	21	32	

Source: Census of Manufactures, 1925.

\* Producing products of a value of \$5,000 or more.

Table VI. Failures, Assets, Liabilities, and Number in Business in the United States Yearly Since 1889

Year	No. Failures	Per Cent Increase or Decrease	Actual Assets, Millions	Total Liabilities, Millions	Per Cent Assets to Liabilities	Number in Business	Per Cent Failing
1927	20,267	+ 1.2	\$385.0	\$653.1	58.9	2,255,429	.89
1926	20,024	+ 6.1	379.7	655.2	57.9	2,258,423	.88
1925	18,859	- 4.3	261.7	479.6	54.6	2,242,317	.84
1924	19,712	+ 2.8	419.7	694.8	60.4	2,195,626	.89
1923	19,159	-14.5	369.1	631.2	58.4	2,136,921	.89
1922	22,415	+11.9	365.6	649.8	56.2	2,074,617	1.08
1921	20,014	+136.4	446.6	755.7	59.0	2,049,323	.97
1920	8,463	+53.4	274.1	426.3	64.3	1,953,042	.43
1919	5,515	-40.8	55.3	115.5	47.9	1,843,066	.29
1918	9,331	-28.3	69.3	137.9	50.9	1,824,104	.51
1917	13,029	-21.0	84.8	166.6	50.9	1,828,464	.71
1916	16,496	-13.3	86.1	175.2	49.1	1,790,776	.92
1915	19,035	+13.4	160.8	284.1	56.5	1,770,914	1.07
1914	16,769	+15.2	197.2	357.1	55.2	1,749,101	.95
1913	14,551	+ 5.3	159.0	292.3	54.3	1,718,345	.84
1912	13,812	+ 9.2	98.5	198.9	49.5	1,673,452	.82
1911	12,646	+ 9.2	102.0	188.1	54.2	1,637,650	.77
1910	11,573	- 2.3	94.2	188.7	49.8	1,592,509	.72
1909	11,845	-15.6	69.3	140.7	49.2	1,543,444	.76
1908	14,044	+36.8	168.4	295.9	56.9	1,487,813	.94
1907	10,265	+ 9.3	287.9	383.7	75.0	1,447,680	.70
1906	9,385	- 5.9	63.1	127.2	50.0	1,401,085	.66
1905	9,967	- 4.3	65.0	121.8	53.3	1,352,947	.73
1904	10,417	+ 6.5	75.7	143.6	52.7	1,307,746	.79
1903	9,775	- 1.9	84.1	154.3	54.5	1,272,909	.76
1902	9,973	- 6.3	50.4	105.5	47.7	1,238,973	.80
1901	10,648	+ 7.4	61.1	130.1	46.9	1,201,862	.88
1900	9,912	+ 2.8	60.1	127.2	47.2	1,161,639	.85
1899	9,642	-16.9	60.1	119.8	50.1	1,125,873	.85
1898	11,615	-11.2	73.1	141.6	51.6	1,093,373	1.06
1897	13,083	-13.3	86.5	158.7	54.5	1,086,056	1.20
1896	15,094	+16.4	147.8	246.9	59.9	1,079,070	1.40
1895	12,958	+ 1.8	87.6	158.7	55.2	1,053,633	1.23
1894	12,724	-17.9	83.2	151.5	54.9	1,047,974	1.21
1893	15,508	+51.0	231.5	332.1	60.6	1,059,014	1.46
1892	10,270	-17.1	54.7	108.6	50.3	1,035,564	.99
1891	12,394	+16.1	102.9	193.1	53.3	1,018,021	1.21
1890	10,673	- 9.0	92.7	175.0	52.9	989,420	1.07
1889	11,719	+10.7	70.5	140.7	50.0	978,000	1.20

Source: Bradstreet's.

Table VI (*Continued*)

Percentages of Number of Failures and Liabilities in the United States and Canada in 1927 and 1926, Classified as to Causes

Failures Due to	UNITED STATES, PER CENT				CANADA, PER CENT			
	Number		Liabilities		Number		Liabilities	
	1927	1926	1927	1926	1927	1926	1927	1926
Incompetence .....	34.5	33.9	20.4	18.9	26.2	25.4	15.6	14.6
Inexperience .....	5.2	5.1	5.2	3.4	7.2	5.8	3.2	2.8
Lack of Capital.....	34.9	32.7	32.9	29.7	34.9	36.9	39.5	40.4
Unwise Credits .....	1.4	1.7	4.4	2.6	4.8	5.0	6.4	5.8
Failures of Others...	1.3	1.2	4.0	2.7	.6	.6	2.6	.5
Extravagance .....	.5	1.3	.4	.7	.6	.7	.6	.4
Neglect .....	1.1	1.5	.4	1.1	1.7	1.1	.9	.5
Competition .....	2.4	2.6	1.6	1.4	7.9	7.0	9.4	9.1
Specific Conditions ..	14.8	15.8	25.9	32.9	13.3	14.1	16.5	21.9
Speculation .....	.3	.4	1.1	1.5	.6	1.2	1.4	1.9
Fraud .....	3.6	3.8	3.7	5.1	2.2	2.2	3.9	2.1

Source: Bradstreet's.

Table VII. Statistics of Industrial Groups

Group No.	Industrial Group	1925				1926			
		No. of Companies Included	Average Total Investment	Per Cent Return on Investment	Earned per \$100 of Common Stock	No. of Companies Included	Average Total Investment	Per Cent Return on Investment	Earned per \$100 of Common Stock
1	Agricultural Implements .....	5	\$ 357,105,027	7.56	\$10.95	5	\$ 369,605,265	9.53	\$15.89
2	Cotton, Silk and Woolen Goods:								
	A. Apparel .....	13	151,808,672	9.36	16.85	14	162,477,171	9.11	17.61
	B. Cotton and Cotton Goods .....	6	138,177,093	1.64	.58*	7	146,181,752	1.67	1.84*
	C. Silk and Rayon .....	7	60,684,461	4.80	5.88	8	63,096,535	1.58	6.41*
	D. Wool and Woolen Goods .....	5	200,492,816	1.26	3.91*	5	199,960,873	.55	4.42*
3	Automobiles and Trucks .....	20	1,049,689,144	22.39	42.16	21	1,323,166,265	23.01	43.71
4	Automobile Parts and Accessories ..	20	240,850,920	19.64	36.17	23	263,598,865	16.65	31.73
5	Auto. Tires, Rubber Goods, etc .....	12	774,173,871	11.51	29.72	12	827,708,417	5.97	6.49
6	Building and Related Lines:								
	A. Cement .....	5	86,262,693	10.57	14.88	6	112,474,795	8.04	10.72
	B. Equipment, Supplies and Const. ..	32	789,434,567	12.81	21.78	33	856,994,588	11.55	19.49
7	Chemicals (Industrial) .....	15	852,025,448	10.79	24.10	16	937,876,128	13.00	28.97
8	Coal and Coke:								
	A. Anthracite .....	2	119,292,450	3.50	5.31	2	118,538,253	8.41	20.28
	B. Bituminous Coal and Coke .....	9	449,267,435	1.12	1.97*	9	435,847,389	1.53	.30*
9	Copper and Brass .....	15	1,075,900,939	5.46	8.73	15	1,156,583,337	5.43	9.33
10	Electrical Equipment .....	4	538,217,906	11.57	18.39	4	560,189,602	12.01	20.40
11	Food Products (Other than Meat):								
	A. Milling Companies (Flour) .....	4	75,790,723	8.41	13.59	6	116,127,587	8.01	10.59
	B. Dairy Products .....	6	112,614,884	15.07	29.12	7	163,121,986	15.56	30.51
	C. Miscellaneous .....	10	272,959,561	14.51	25.48	12	358,377,383	16.85	33.36
12	Household Prods., Furn. and Supplies	12	236,518,739	15.78	33.17	13	344,552,720	14.74	31.36
13	Lead and Zinc .....	9	221,222,009	11.90	30.29	9	226,986,865	12.47	32.25
14	Leather and Shoes:								
	A. Leather .....	7	82,162,575	4.09	2.33*	7	81,458,400	.80	9.11*
	B. Shoes .....	8	158,287,676	13.12	17.39	9	165,543,911	12.46	16.58
15	Machinery and Machine Equip .....	14	317,508,644	8.10	15.42	14	333,546,927	10.03	18.92
16	Meat Packing .....	3	499,668,682	6.41	5.63	3	499,540,873	5.66	3.38

Table VII. Statistics of Industrial Groups (Continued)

Group No.	Industrial Group	1925				1926			
		No. of Companies Included	Average Total Investment	Per Cent Return on Investment	Earned per \$100 of Common Stock	No. of Companies Included	Average Total Investment	Per Cent Return on Investment	Earned per \$100 of Common Stock
17	Mining and Smelting (Misc.).....	13	\$466,591,623	9.58	\$15.17	13	\$476,530,217	9.51	\$15.59
18	Miscellaneous Securities:								
	A. Drugs, Medicines, Cosmetics, etc.	1	2,520,584	14.53	38.93	3	13,508,415	27.91	49.55
	B. Can Companies .....	2	39,414,324	15.14	20.84	2	42,612,014	9.63	12.91
	C. Manufacturing .....	17	341,766,201	11.56	26.80	17	358,322,871	11.69	26.94
	D. Service (Express, etc.) .....	8	213,951,786	10.56	14.75	9	266,048,241	8.85	10.85
19	Office and Business Equipment.....	7	141,536,214	12.83	24.38	7	143,551,651	14.17	19.45
20	Oil Producing and Refining.....	40	5,059,925,437	11.32	17.76	43	5,921,480,792	10.98	18.22
21	Paper and Paper Products.....	10	308,512,151	7.59	12.56	10	389,189,578	5.90	8.53
22	Radio, Phonograph and Musical Insts.:								
	A. Phonograph and Musical Insts.	5	100,079,913	1.65*	4.23*	4	105,608,045	12.16	17.69
	B. Radio .....	2	40,047,828	7.69	12.26	2	40,784,927	11.70	24.47
23	Principal Railroads .....	34	13,693,604,285	5.72	10.61	34	14,023,584,300	6.12	12.23
24	Railroad Equipment .....	12	717,672,335	6.25	9.71	15	747,305,432	9.67	16.49
25	Mail Order .....	4	232,547,385	15.84	25.64	5	272,530,866	13.01	21.36
26	Shipping and Shipbuilding.....	3	203,990,825	19.1*	7.97*	3	204,363,613	13.34	6.58*
27	Steel and Iron.....	23	3,935,238,357	5.71	10.38	23	4,027,629,349	6.73	14.09
28	Pipe (Cast Iron).....	4	53,615,622	14.36	36.14	4	55,345,651	13.39	34.62
29	Sugar Producing and Refining.....	14	612,976,336	4.83	5.00	16	632,931,094	4.30	2.45
30	Theaters, Motion Pictures, etc.....	8	269,524,048	8.82	21.58	9	339,762,221	8.96	19.73
31	Tobacco and Tobacco Products.....	5	174,888,623	18.55	32.05	5	178,016,646	19.14	35.05
32	Utilities—Electric, Gas, Water, etc.:								
	A. Holding Companies .....	6	893,219,292	7.64	20.78	12	2,023,656,443	7.20	13.27
	B. Operating Companies .....	15	1,719,610,055	6.93	11.15	17	2,131,854,643	7.53	11.78
34	Utilities—Traction, Transp't, etc....	3	1,653,18,977	5.28	4.99	2	212,283,988	4.68	3.45
		479	\$38,231,574,946	8.02	\$15.25	515	\$42,340,351,874	8.40	\$16.34

\* Loss.

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